Lolo Peak Resort

A Design Thesis Submitted to the
Department of Architecture and Landscape Architecture
of North Dakota State University

By:
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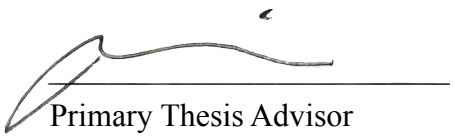
In Partial Fulfillment of the Requirements
for the Degree of
Master of Architecture



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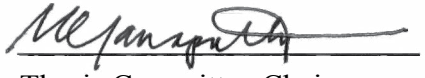


Thesis Committee Chair

May 2015
Fargo, North Dakota

Contents

Architecture in the mountains of Montana. Resorts in the alpine climate seem to only have one season. This is because more people see mountain resorts as a winter, rather than a four season, getaway. The need is out there for resorts to have more than one clientele. The designs today need to be bringing in people everyday and not just when the snow is on the ground. My design will change the way people look at resorts in the mountains.

Narrative

The landscape of the mountains and the natural environment around it have fascinated me for a while now. I make trips out to the mountains every year for recreational use. I myself used to only see them as a perfect winter time landscape for alpine skiing and snowboarding. Over time my travels to the mountains have revealed different aspects that mountains have.

My travels to the mountains were always in the winter season but a couple of years ago I traveled out to Florence, Montana for a wedding and was amazed by how different the mountains looked to me. The trees seemed richer and the animals were easier to spot. If I had more time I would have gone hiking to see the beauty up close instead of from afar.

Just before arriving at Florence I noticed the side of the mountain had trees removed in the form of ski runs, but there were no lifts or lodge. I asked someone from the area and found out that the owner of the land is working on creating a Ski Resort. Today nothing new has happened due to disputes between people for the Resort and people against it.

Project Typology

This building is an all season resort. It is a place for people to go for vacations, business retreats, or competitions.

Name: One Ski Hill Place

Location: Breckinridge, Colorado

Building Typology: Resort

Elements: Aquatic Center
Bowling Alley
Private Ski Lockers
Fitness Center
Rejuvenation Center
Cafe & Restaurants
Movies & Games
Meeting & Event Space
Breckenridge Fun Park

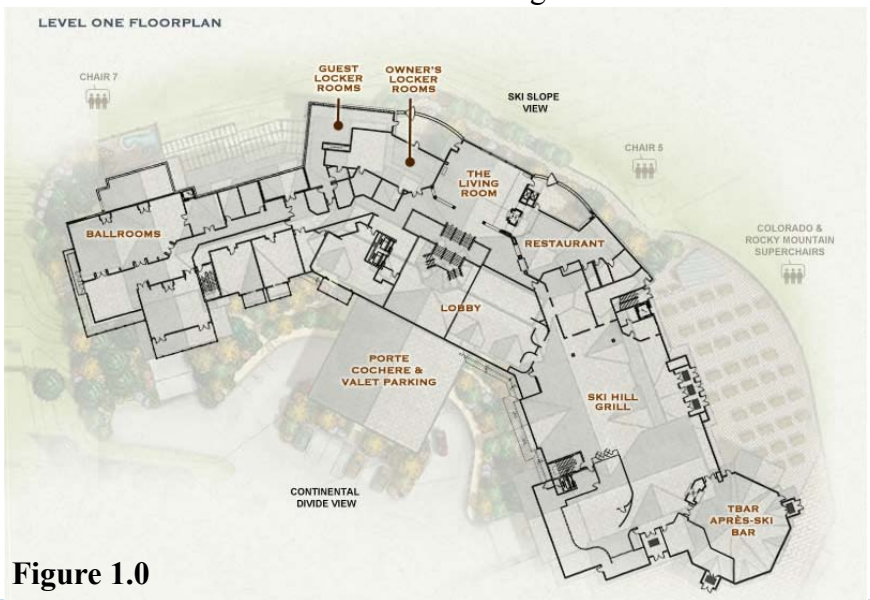


Figure 1.0

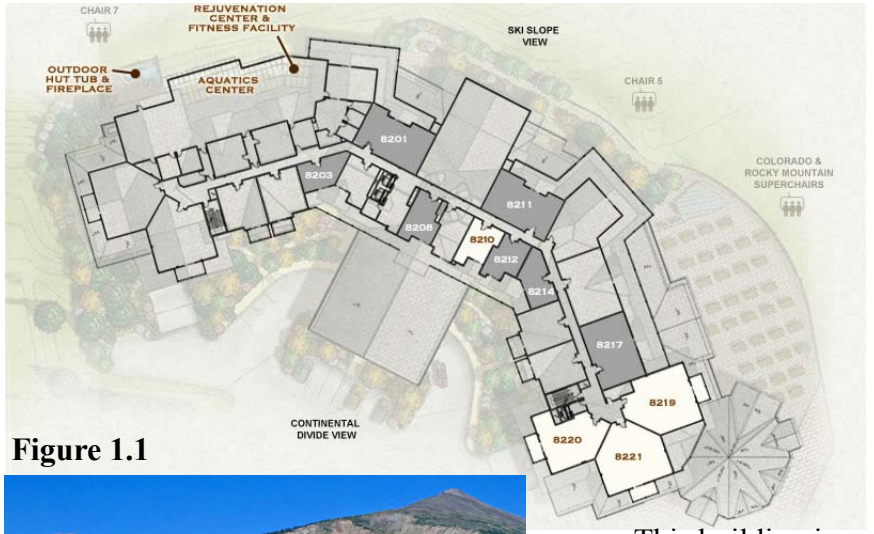


Figure 1.1

Figure 1.2

This building is mainly vacation homes which take up 70% of the resort space. It does have a bowling alley and a theater for people who own the vacation homes can use.

Figure 1.3

Name: Koutalaki Ski Village

Location: Levi Finland

Building Typology: Ski Resort & Recreational Center

Elements: Hotel
Restaurant
Spa Fitness
Locker Rooms
Retail
Roof Access
Chalets (Vacation houses)

Figure 2.0

Figure 2.1

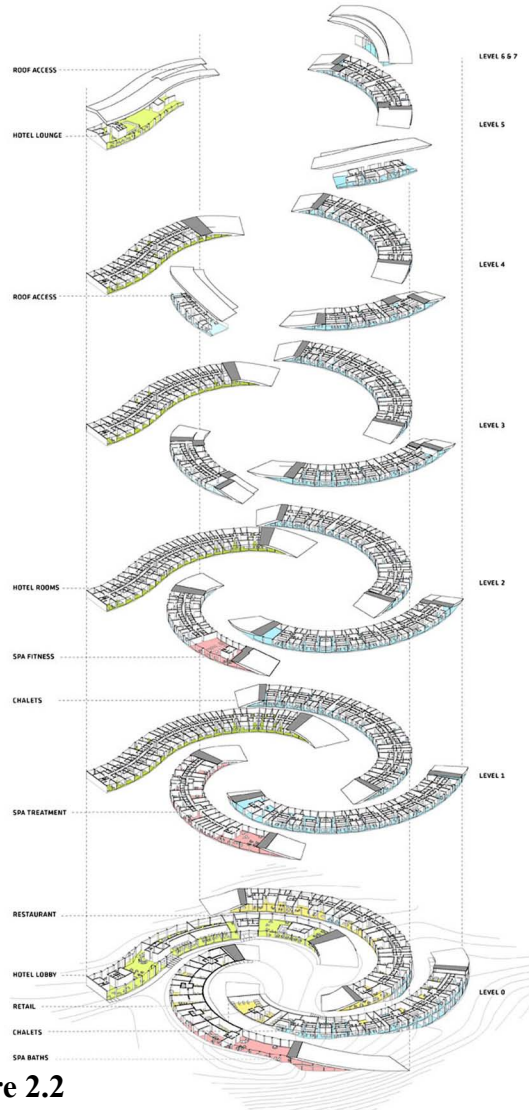


Figure 2.2

The building is in progress and was the winner of the invitation competition in Levi Finland. This building was designed to have views out from each different room and also have a roof that you can walk on. The majority of this design is for hotel guests and vacation home owners.

Figure 2.3

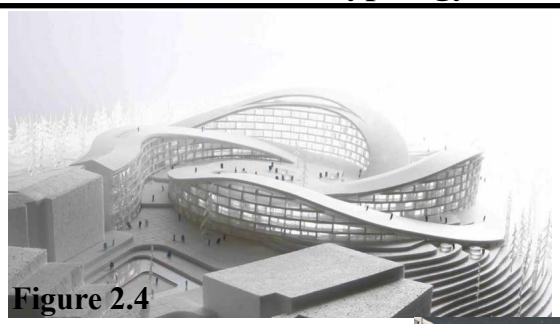


Figure 2.4

Figure 2.5

Figure 2.6

Figure 2.7

Name:	Alder Creek Nordic Center
Location:	Truckee, California
Building Typology:	Cross Country Ski Center
Elements:	Multiuse Room Ski Patrol Office Sales/Info Retail Lounge Dinning Food Service Rental Public Lockers Wax Room Offices Restrooms Terrace

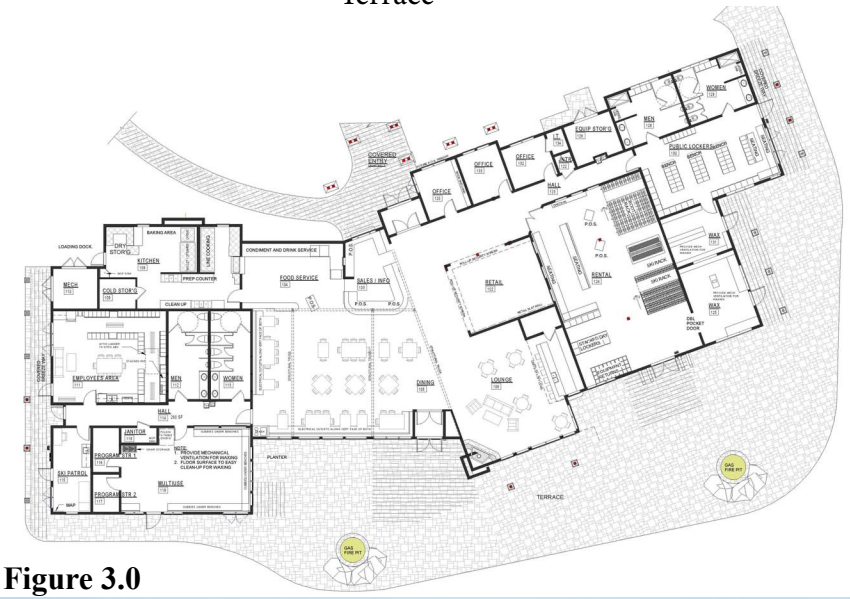


Figure 3.0

EAST ELEVATION

NORTH ELEVATION

SOUTH ELEVATION

WEST ELEVATION

Figure 3.1

This case study is a remodeling and addition to the existing site. It adds parking spaces with an overflow parking lot. The area of the building is approximately 23% larger. The new layout when finished will have an adequate amount of room for each space that was designed.

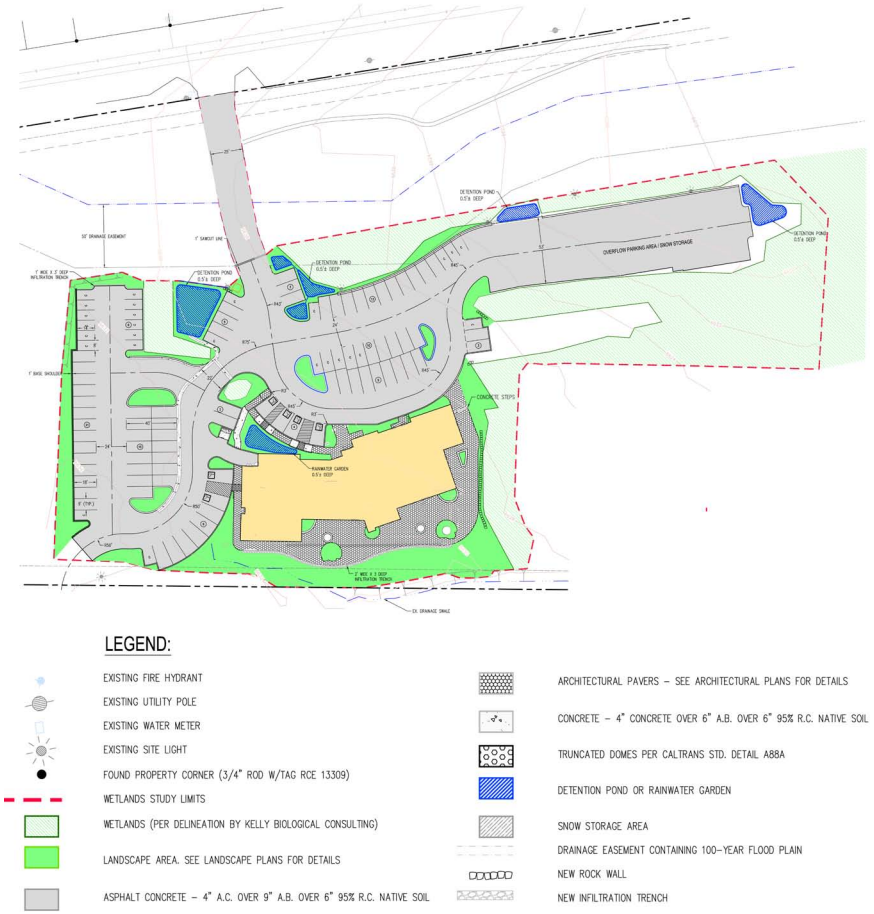


Figure 3.2

Circulation Diagrams

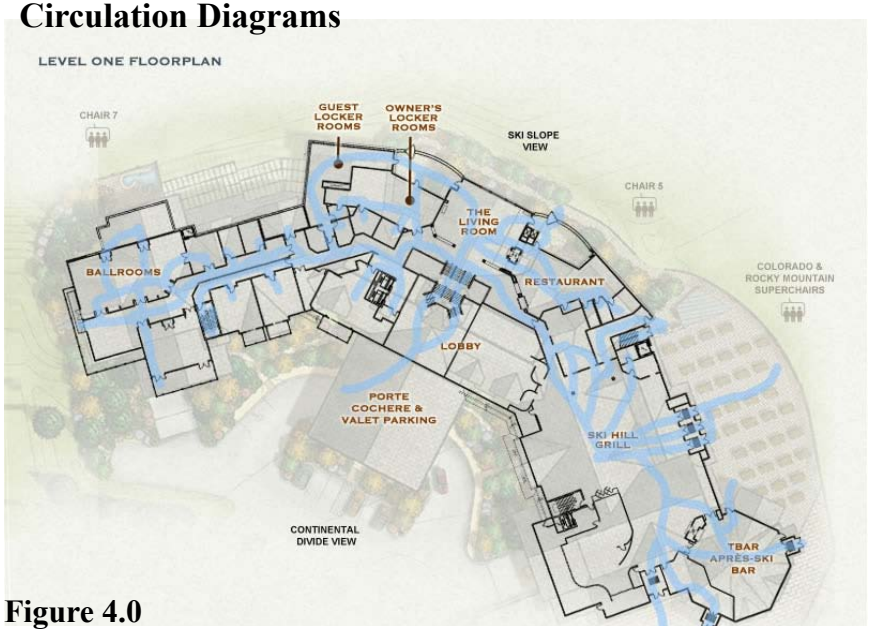


Figure 4.0

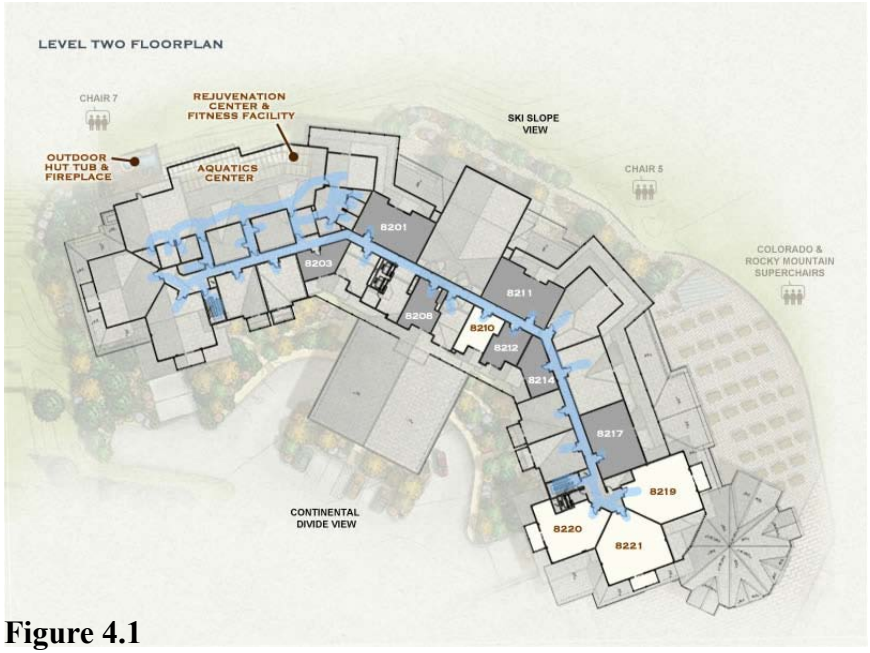


Figure 4.1

Circulation Diagrams

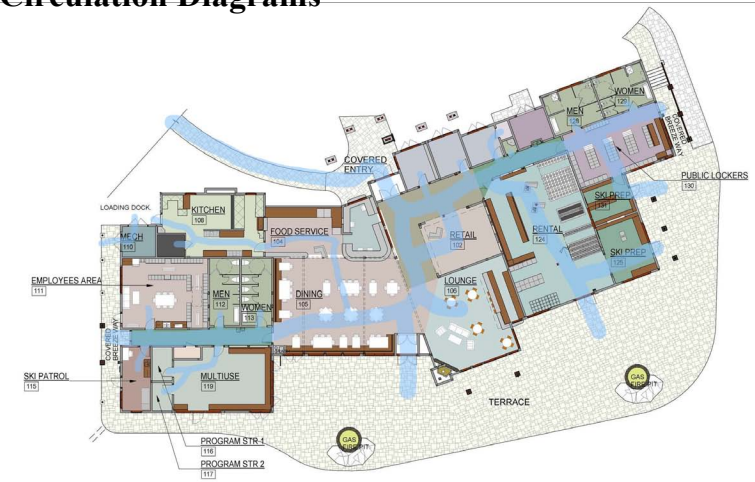


Figure 4.2

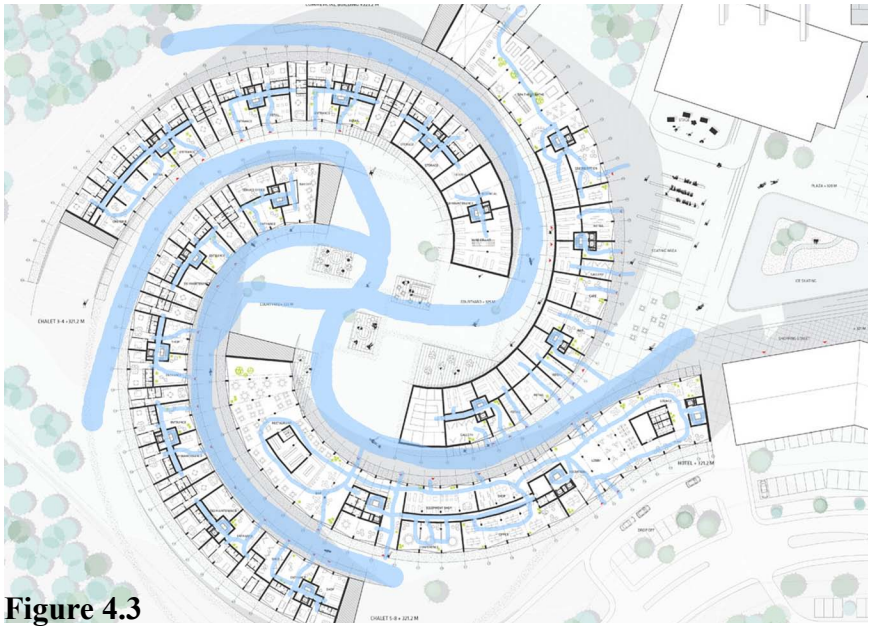


Figure 4.3

The project types of my case studies are Resort, Ski Resort & Recreational Center, and Cross Country Ski Center. They are located in California, Colorado, and Finland. They are also usable in all seasons of the year, which works well with my thesis.

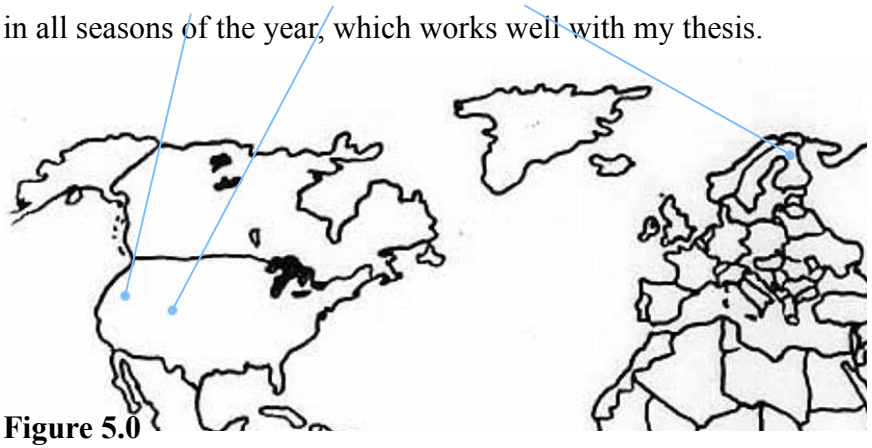


Figure 5.0

My case studies have many similar characteristics which each other. They are not similar between all of them but between them most of the components are in two out of the three case studies. For example One Ski Hill Place and Koutalaki Ski Village have lots of lodging available for people and Alder Creek Nordic Center does not have that amenity.

Koutalaki Ski Village shows an interesting idea for a design that allows people to use the roof at all times of the year. It is a grass roof that is sloped for anyone to walk up during any season and planned to be used for picnics, viewing area, skiing, and snowboarding.

One Ski Hill Place and Alder Creek Nordic Center are designed more for a flow of people in the building with a lounge and dining in both. They also have a multi-purpose room for large events.

These case studies show give me a better idea of how much area is needed in my type of design for the number of people projected to be using it at a certain time. They also work well with my Unifying Idea since they are all season establishments that are in the Alpines.

Dining

The restaurant and bar will accommodate anyone who is there and can seat them inside or outside.

Fitness

The fitness area will have exercise equipment, massage therapy rooms, some weights, pool, hot tub, sauna, and locker rooms.

Lobby/Lounge/Information

Space for people to wait to meet up with others or relax in couches and chairs near fire places.

Equipment Rental

This is the area people go to for rent equipment that is needed for the activity.

Conference Rooms

These are large gathering rooms for business retreats or special events that need a larger space.

Merchant/Souvenir Store

This is where you can buy things that you forgot or need for your activities and or memories.

Client

The client for this project is Tom Maclay and other private investors of the Bitterroot Resort. Mr. Maclay will be the majority owner of the project.

Users

The users of this resort are going to range from youth to elderly. They will come in as a group of friends, family, office parties, or attendees of other large group or special events. This resort will accommodate all who are looking to ski, snowboard, snowshoe hike, cross-country ski, sled, mountain bike, hike, or just nature loving.

Staff

The resort staff will run the operations and maintenance of the resort. Positions of the employees include managers, floor staff, instructors, athletic trainers, cooks, bar tenders, food servers, massage therapists and custodians.

My site is on part of the Bitterroot Mountain Range, which is in Idaho and Montana. The portion of the mountain that my site is on is in Montana. The town in which the address for my site is in Ravalli County but my site is in Missoula County.

Figure 6.0

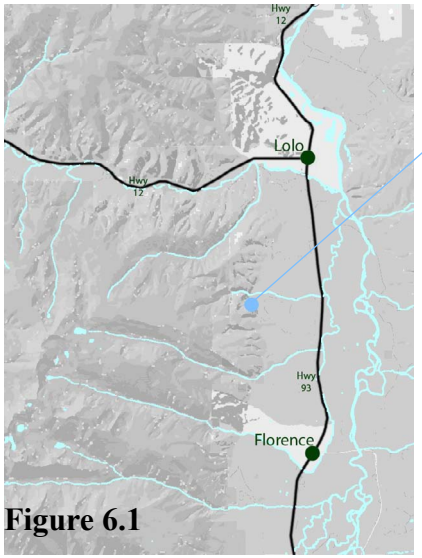


Figure 6.1

The address of my site is 8744 Mcclain Creek Road Florence, Montana 59833

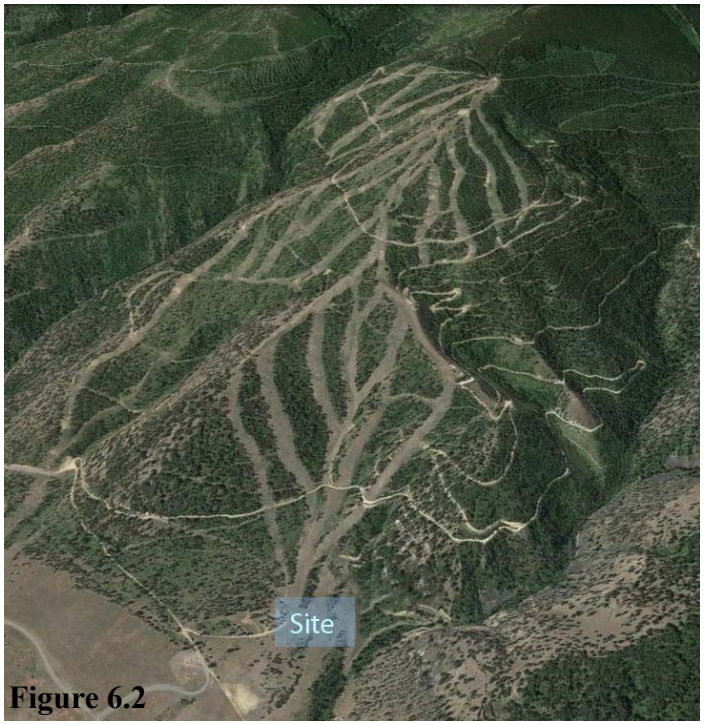


Figure 6.2

The Project Emphasis

The emphasis of this project is to create a place where anyone can go to relax and enjoy everything that a mountain has to offer during each season.

Project Goals

Theoretical

My theoretical goals, for this project, consist of me taking my case studies and utilizing them to their potential. The information that I got from my research will inform me on the spacing and sizings within my design.

Physical

The physical goals, for my design, are to create a design that fits in with the area around it. In order to accomplish this I will mainly be using materials that can be found in the area of the Bitterroot Ridge mountain side.

Social

My social goal is to give a clear presentation of my project to the viewers and answer questions with a clear and concise answer.

Academic

My goal is to take my time on the spatial organization and floor plan layout instead of just rushing through them just to get a project done. My past projects were more focused on the skin of the building instead of the circulation and floor layout.

Professional

At this stage I hope to find a job in the area that I can accumulate hours and take my tests for licensing. Once I am licensed I want to work out in the mountains on private homes and other mountainside designs.

Personal

I hope to always have time for friends and family and that I enjoy working my projects and never have the feeling that work is something that I have to do, instead of what I want to do.

i. Definitions of Research Direction

The research that I need to do in order to have a better understanding for my project would have to include, but not restricted to, more floor plans of mountain resorts, more history of my site, and site analysis done with a site visit. I will need to find typography maps, weather patterns, sun diagram, wind diagrams, and average precipitation amounts.

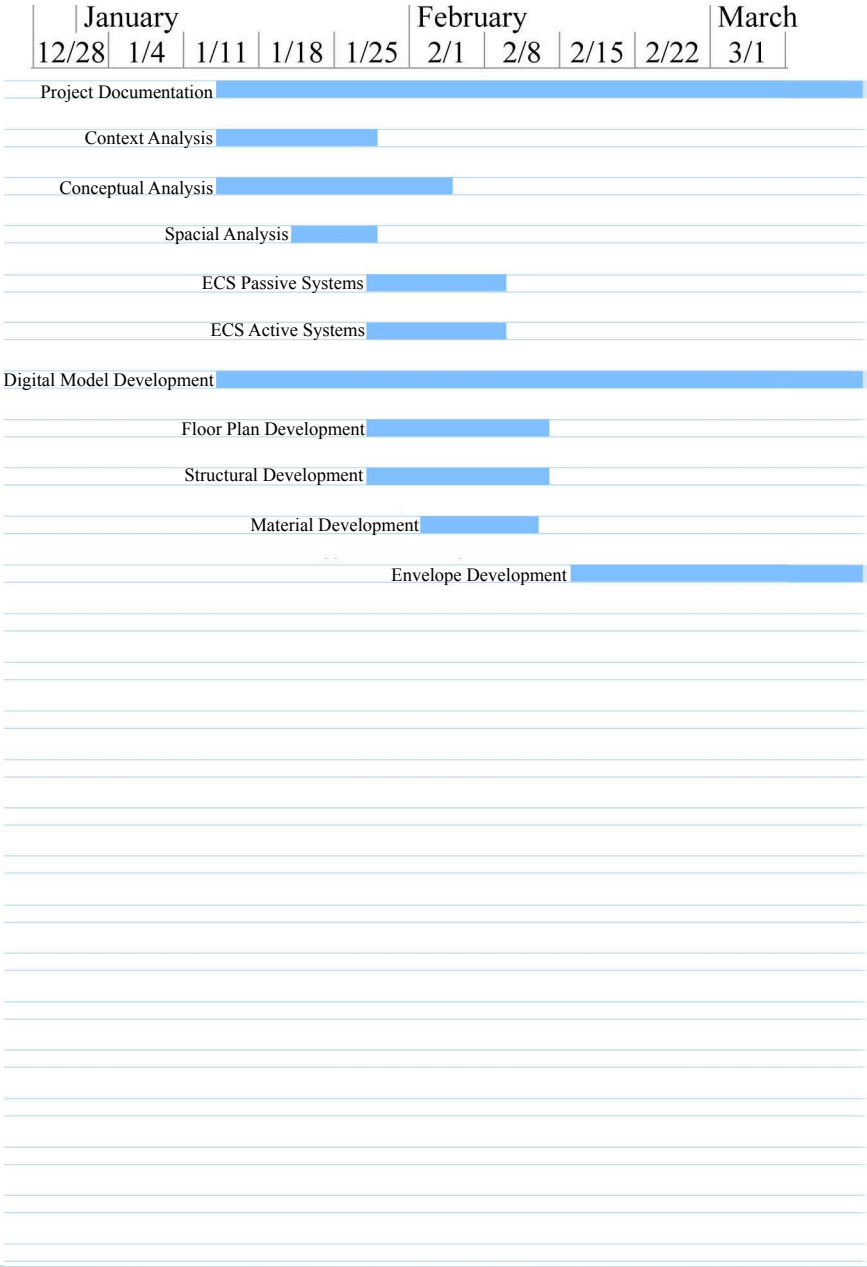
ii. A Plan for your Design Methodology

My design methodology will use previous designs of cabins and ski lodges in the mountains to create the design of my all season resort. I will look at the material and how the material has been used to help me with my design decisions. I will use buildings from different states, mountain ranges, and hopefully even countries. I will use my case studies for spatial organizations, room sizes, and building area.

iii. A Plan for Documenting the Design Process

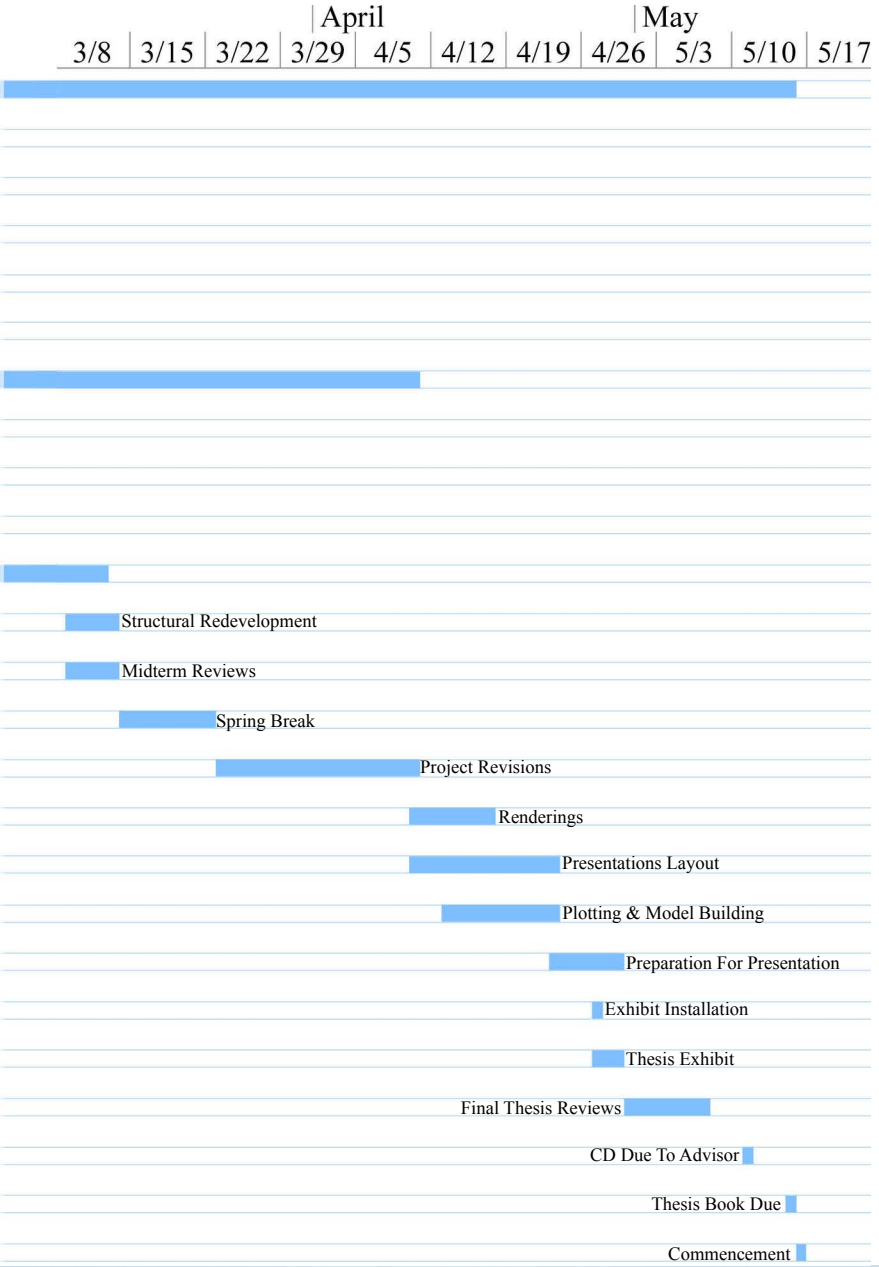
The documentation of my Thesis will be with the use of InDesign to help compile a book that will be preserved in the NDSU digital library. This book will be available to anyone with the rights to view the NDSU library. At the completion of my Thesis, I will present it to all those who are willing to join. At the completion of each design stage, I will bring the data or images into my book.

iv. A Specific Schedule for the Project



A Plan for Proceeding Continued

iv. A Specific Schedule for the Project



Economics of a Resort

There are multiple factors that come into play when designing a resort. You have to figure out the max number of people that your resort can handle just with the ski runs themselves. The amount of space in which a skier needs depends on the skill level of that skier.

When I first thought about this I figured that you can have more experts skiing per acre than beginners but I had that all wrong. For the level of a Beginner you can have 10 to 15 skiers per acre. As the skill level increases the numbers of people per acre decrease. Intermediate skiers can have between 8 and 10. Advanced get allotted 5 to 8 and Experts can have 3 to 5.

The skill level has more to do with the pace at which they are skiing. Beginners travel at a much slower pace and need less space per person to keep a comfortable spacing between people. Beginners travel approximately 5 mph and they stop to rest around every 750 feet. Low intermediate travel at 10 mph. Intermediate travel at 15 mph. Advanced intermediate travel at 20 mph and Experts at roughly 25 mph. They all take breaks after about the same amount of time skiing but the speed of each skier makes a big difference. A beginner travels 750 feet and an Expert travels 2,500 feet before stopping.

Besides figuring out how many people can be on the slopes at once you also need to determine how fast of a lift your resort can handle. For this you need to how long the lift will be traveling, what size chair lift, and the max speed you can have the lift go during max capacity of skiers. Now days the slowest lift you can consider that people will rider is a fixed-grip chair lift that can have a chair that can hold 2 to 6 people. The capacity of people per hour on this style lift is 3,200. That is three time faster than a surface lift that is just a rope that skier have to hold onto to go up the mountain. No resort today still uses this style lift because the skiers will not pay to have to use just as much energy to go up the mountain as it takes to go down it.

When figuring out lifts and where to put them you are going to want to look at the slope of the runs that go to that lift. The slope of the run will help you determine which skiers are going to be ending up at that lift. The average grade that a Beginner will be going down is 10 percent which is 6 degrees. With Intermediates it 25 percent and with Advanced skiers they will do 35 percent slope. Once you figure out the slope, you know the slope of the runs that will be ending at each lift. Then you can determine the number of riders per hour to keep up with the flow of skiers.

Figure 7.0

The value of an area is always an estimate but if you use the most recent calculations for all the aspects of a resort, you can estimate the cost and revenue of a resort before it is built. The major cost of the resort is not the buildings. The major cost is the designing and creating of the runs with the lifts. That is what makes it very crucial to not use the most expensive lifts when the cheaper one will keep up with the flow of skiers.

Figure 7.1

A factor that cannot go without being accessed is that of a snowboarder. On average they make up to 35 percent of the population on the mountain and they travel at slower speeds than skiers. What factors into that slower speed is that snowboarders take wider turns back and forth to keep their speed at a constant pace. This adds distance to the runs for snowboarders also compared to skiers. This results in a 26 percent slower speed for each skill level and a 25 percent of the occupancy of the lift time.

Psychological Health and Wellness of Vacations

Everyone who has a job needs time away from their job and vacations are an easy way to help with that. Studies have been done to find out if the amount of time taken on a vacations has a more lasting affect with own health and well-being. This study was done in the winter of 2008. The study gave out questionnaires to the participants to fill out two weeks before leaving on vacation and the same questionnaire was to be filled out again two weeks after their vacation. They were also given a phone that had prepaid minutes on it so that one of the researchers could call and ask a few questions shortly after arriving at their vacation destination and shortly before leaving their destination.

The results of this study showed that a majority of the vacationers had better health and wellness two weeks after returning to work than before going on vacation. For others it seemed as if the vacations did nothing for them that resulted in lasting effects. For a lot of these people, they had negative affects during the vacation or did not participate in enjoyable activities. Also the amount of time spent on their vacation did not have a large difference in the health and wellness of the participants.

Psychology of sport involvement.

A better quality of life has been correlated with sports that have an action-based exercise. Studies over the years have shown that sports and exercising give people more positive feelings. People participating in action based activities for recreational purpose is a healthy for one well-being.

Through multiple studies done over time, three elements have been revealed that are contributing factors to happiness. These elements are pleasure, flow, and involvement.

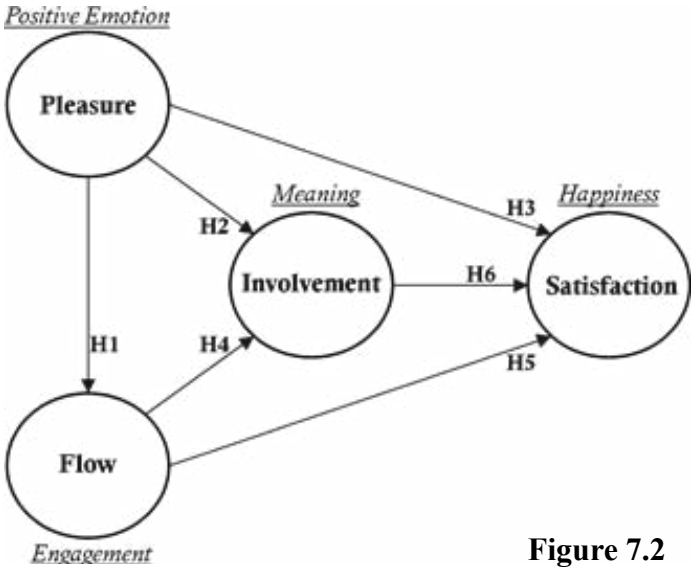


Figure 7.2

The first element of happiness/well-being is pleasure, which people pursue for their own sake and is only measurable as a subjective experience. Multiple studies have shown that sport participation has led to psychosocial health. The amount of pleasure that each sport can give a person depends on the amount of enjoyment they have for the sport, in either watching or participating. The intensity in which you participate in a sport correlates with the amount of pleasure you receive from the sport.

The second element is flow or engagement. This is the state of mind you have where you are so concentrated on the activity at hand that nothing outside of the activity seems to matter. The feeling you get from the engagement of the activity is so enjoyable that people are willing to pay more to achieve this state of mind.

Figure 7.3

In downhill skiing/snowboarding, people get to a state of mind that is free and endless. They are focused on what they are doing and who they are with. They feel a greater sense of happiness and are more willing to help someone who they don't know after a tumble on the slopes. When people are in this state of mind, time passes by at an accelerated rate causing one to lose track of time.

The third element is involvement/meaning. This part is when you start setting goals, which can be achieved over time with the participation of that sport. This is also the satisfaction that you get from the sport in which you are participating in.

Positive psychology is something that everyone should want not just for themselves but also for their community. The more people in your community with positive psychology the more your community will flourish.

One of the ways to help communities flourish is to get them to participate in physical activities. Studies are showing that physical activity even at an individual level can prevent mental illness and ease people from the stress of life. Sport participants have not only shown improvements in health, in long lengths of time, but it has also created stronger social bonds between people.

I discussed three topics in my unifying idea research. The three topics were economics, psychological health and wellness of vacation, and psychology of sport involvement.

The economics of resorts are different for each one. The main detail that needs to be figure out is the max occupancy of the mountain. The max occupancy tells you how to size the chair lifts, where to place the lifts, how long the lift needs to be, how many chairs, and which style lift to use. The size of the resort and the amount of rentable living can all be figured out by occupancy of the mountain and lifts.

The max out put will only be tested on heavy occupancy days which are holidays and weekends. The middle of the week normally has less than 50 percent occupancy. When I go to the mountains in the winter time I plan on that factor and do my snowboarding on the week days when the majority of the people are working.

The skill level is the most important piece of the puzzle for figuring out everything. If you have just beginners on the mountain then you can have more people on the mountain since they need less space than intermediate, or experts.

Unifying Idea Research Summery

The psychological health and wellness of vacations talks about the reasoning behind vacations and how they affect your working environment. A one week vacation gives you the same length of happiness into your job when you return as a two week vacation. With that knowledge I would recommend taking two one week vacations over a longer two week vacation. This way you can have longer lasting affects in number of days from your vacations being split up instead of all at once.

The psychology of sport involvement talks about how physical activity creates better health and wellness for the people. This portion has research that talks about the three parts of happiness which are pleasure, flow, and involvement. The physical activity in which you take part in needs to encompass all three parts for you to get the most enjoyment out of the activity.

If you don’t get pleasure out of the activity you will never reach a flow state of mind and you will never be happy doing that activity. This will cause a you to have a negative feeling towards physical activity and have a negative impact towards your psychological well-being.

The cost of living in Lolo, Montana is similar to living in any other resort town. The only difference is that Lolo has no resort for the people to work at or rent space out to others vacationing to help with the cost of living there. This resort will help bring more jobs into the area and help generate revenue to the local businesses.

History of Ski Resorts and Their Transformation into a Four-Season Resort.

When skiing was first introduced it was more for the adventure seeking people in great shape. They had to be willing to make the exhausting trek up the mountain so they could then ski down. Most of the people made two to three runs down the mountain in a day. It is really hard to get lots of people to come to a ski resort when they have to exert more energy and time to hike from the base to the peak then is does to ski from the peak to the base. The image below is of an instructor giving lessons in alpine skiing.

Figure 8.0

The rope lift was first used in 1934 in Woodstock, Vermont. This made it possible for more skiers to get up to the tops of the runs with less effort than walking, but still took a great deal of upper arm strength to hold onto the rope while it pulled you up the mountain. These lifts were very inexpensive and could be put up anywhere. This also made it easy for people to exit the lift at any point along the way to the top unlike the lifts we have today where you have to wait till the end of the lift to exit the lift.

Two year after the first rope lift was installed; the first chairlift was invented and installed in Sun Valley, Idaho. This changed the way people looked at skiing and it started getting people to travel to ski resorts for vacation. Chairlifts are not the only advancement that Sun Valley incorporated to their mountain. They also put in a ski train system which brought people from the city to the base of the mountain where the lodge is on their day off.

Figure 8.1

This train system not only made it easy for local people get to the base of the mountain but also made it easier for vacationers as well. People traveling on vacation could take the train from their local town to, in this case, Sun Valley and then from Sun Valley they could take the ski train to the lodge.

Since skiing was becoming more popular in the early years; instructors became a necessity to give lessons to everyone in need of them. The rapid growth of popularity of skiing gave birth to multiple areas taking on the expense of adding more ski runs and starting new ski resorts in other parts of the country. As new resorts started being designed they started designing places to stay along the mountain side. These places lacked in just about every amenity possible, including running water.

After the oil boom in Aspen, Colorado the town started declining in population and midway through the 20th century the Aspen mountain resort opened up with the largest chairlift to date. It was a single person chairlift but this caused gave people a longer distance of to ski down before needing to ride the ski lift again. This new resort also helped the dying town to become a new destination to live.

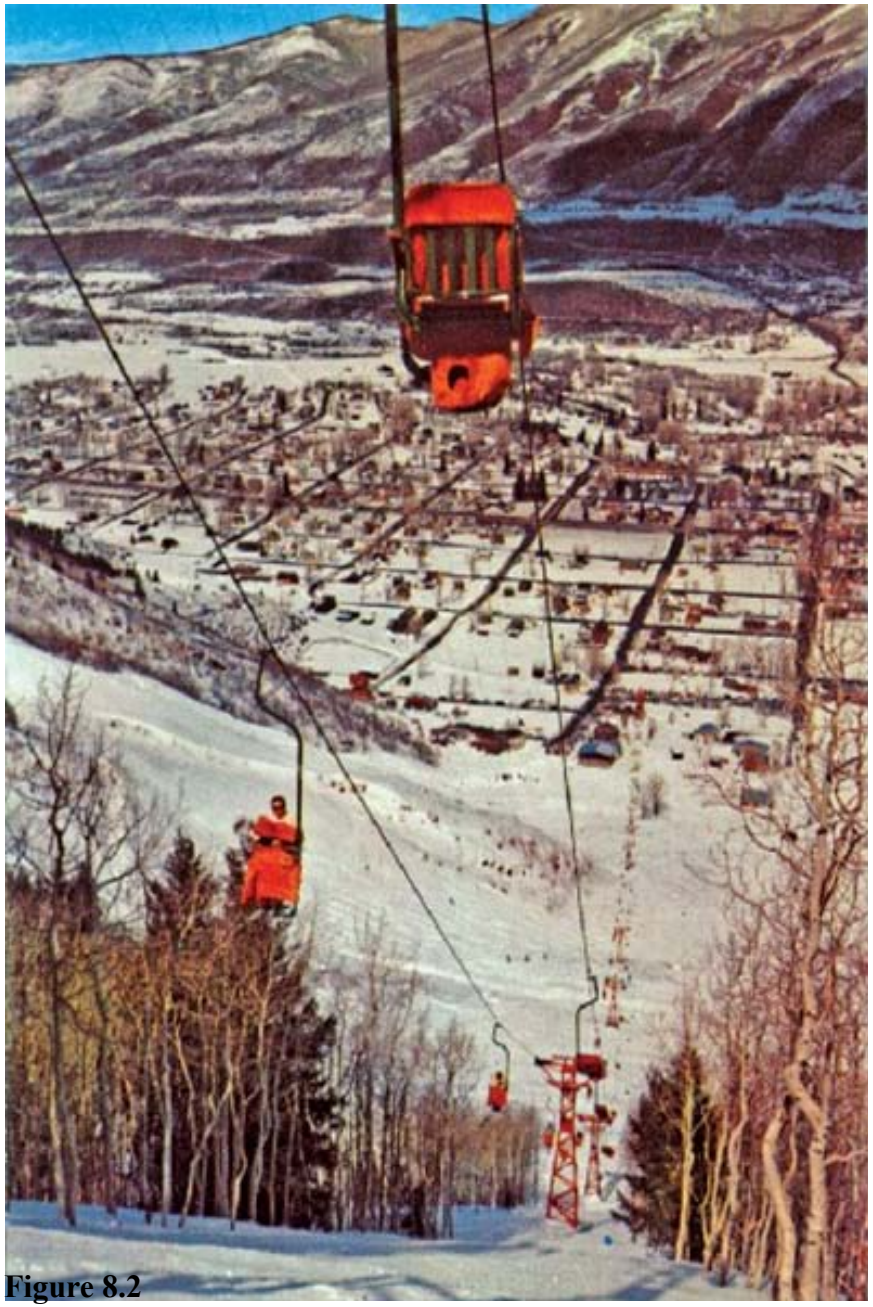


Figure 8.2

Ski resorts were going up so fast and needed lots of room for people to stay that, in Snow Lake, the lodge looked more like a modern roadside hotel. The one and only feature that made it different from a motel was the fact that it had an A-frame entrance which is the iconic entrance design for a ski lodge.

Figure 8.3

During the 70's and 80's snowboarding started to become extremely popular and was welcomed as a world sport as a faster pace than the ski resorts. For a while, snowboarding was banned from the slopes by the park officials. The first resort to start allowing snowboarding on the slopes was in Breckenridge, Colorado. Before a snowboarder was able to use a lift at the resort it had to do a small assessment of their skills to make sure they were not going to crash into the skiers that were already on the slopes.

As fast as technology came out, the chairlifts were upgraded to make any destination that implemented them instantly popular. This was a needed upgrade to keep peoples interest in the resort but also started costing enormous amounts of money. The costs were starting to cause resorts to close because they couldn't keep a ski area open long enough to pay off the cost of the new lifts and all the other maintenance of the runs. This problem caused resort to come up with other activities that would bring in tourists during other parts of the year.

The most popular add on to the ski resorts was a golf course. This would bring in the older group travelers who golfed as a pastime of their retirement. Every resort had hiking as a part of their summer time activities but some adopted tennis and other court style activities.

Soon spas and fitness areas became a more luxurious resorts to stay at and also more people looked at them for family vacations. Parents could send the kids off with guides to hike the mountain and see nature while the parents stayed back and enjoyed the relaxing spa and the peace and quiet of the kids being gone.

My site is part way up the Bitterroot Mountain Range. The road as of today is a public access through private property one lane gravel road with minimum maintenance

Figure 9.0

This site has knee high grass with 30' to 40' tall conifer trees. Nature interacts within the site and surrounding areas. The ski runs connect before the site and the slope of the runs flatten out to a walkable grade.

A couple of years ago there was a small wood building next to my site but it has been since taken out. The spot where the building had been sitting is no longer there as the grass has covered the area.

The quality of light, on my site, is spectacular. In the morning the sun shines on my site warming it up and brightening up the colors of the vegetation around it. In the evening the sun starts to cast a shadow over my site and lights up the mountains to the east of my site.

Figure 9.1

This site is between two creeks that flow year round. The amount of water that flows through them changes between the seasons just as one would come to expect. During the winter, the top of the creek freezes over due to very little water moving down it. In the spring and through part of the summer it flows much faster.

The wind in this area is very low to start with and with the density of trees you can hardly tell that there is a wind. The only time you can really feel the wind is when it is coming from the North East because there are no existing trees to block the wind.

The human characteristics on this site are the cut out ski runs, a single lane gravel road to the peak of the mountain, and a wooden fence put up by the owner of the property to keep vehicles of the site and on the road.

The site has no visible problems of erosion or dying trees. There are very few cougars in the area, which is being monitored and has the possibility to be cut down by 30% due to hazards in other areas nearby.

Soil Information

Figure 10.0

Soil Information

310E—Losthorse very stony sandy loam, 15 to 35 percent slopes

Map Unit Setting

Elevation: 3,250 to 5,300 feet

Farmland classification: Not prime farmland

Map Unit Composition

Losthorse, extremely stony, and similar soils: 85%

Minor components: 15%

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Losthorse, Extremely Stony

Setting

Landform: Escarpments on outwash fans

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Colluvium derived from granite and gneiss

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 3 inches: very stony sandy loam

E - 3 to 6 inches: stony sandy loam

Bw - 6 to 15 inches: very cobbly coarse sandy loam

C1 - 15 to 25 inches: very gravelly loamy coarse sand

Soil Information

C2 - 25 to 60 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 15 to 35 percent

Percent of area covered with surface fragments: 6.0 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Other vegetative classification: Douglas-fir/snowberry-bluebunch wheatgrass phase (PK311), ponderosa pine/ bluebunch, wheatgrass (PK130)

Soil Information

Minor Components

Chereete, stony

Percent of map unit: 10 percent
Landform: Escarpments on outwash fans
Down-slope shape: Linear
Across-slope shape: Convex
Other vegetative classification:
ponderosa pine/bluebunch wheatgrass (PK130)

Repkie, bouldery

Percent of map unit: 5 percent
Landform: Moraines
Down-slope shape: Linear
Across-slope shape: Convex
Other vegetative classification:
Douglas-fir/ninebark-pinegrass phase (PK262),
Douglas-fir/snowberry-pinegrass phase (PK312)

329D—Sawicki-Perma-Sheafman complex, 8 to 15 percent slopes

Map Unit Setting

Elevation: 3,210 to 6,230 feet
Farmland classification: Not prime farmland

Soil Information

Map Unit Composition

Sawicki and similar soils: 45 percent
Perma and similar soils: 35 percent
Sheafman and similar soils: 20 percent

Description of Sawicki

Setting

Landform: Fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

A - 0 to 9 inches: gravelly loam
Bt - 9 to 17 inches: very gravelly clay loam
BC - 17 to 28 inches: very gravelly loam
C - 28 to 60 inches: very cobbly coarse sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.0”)

Soil Information

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: B

Description of Perma

Setting

Landform: Fan remnants

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Gravelly and cobbly alluvium

Typical profile

A - 0 to 10 inches: cobbly sandy loam

Bw - 10 to 16 inches: very gravelly sandy loam

C1 - 16 to 30 inches: very gravelly sandy loam

C2 - 30 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat):Moderately high to high (0.57 to 5.95 in/hr)

Soil Information

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 1 percent

Salinity, maximum in profile: Nonsaline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 3.2”)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Description of Sheafman

Setting

Landform: Outwash fans

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Gravelly outwash derived from granite and gneiss

Typical profile

A - 0 to 10 inches: gravelly coarse sandy loam

Bw - 10 to 14 inches: gravelly coarse sandy loam

C1 - 14 to 30 inches: very gravelly loamy coarse sand

C2 - 30 to 60 inches: extremely gravelly coarse sand

Soil Information

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (1.98to 5.95 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A

Utilities

None

Vehicular Traffic

Very little

Must travel down a one lane gravel road with minimal maintenance.

Pedestrian Traffic

Very little

Topography

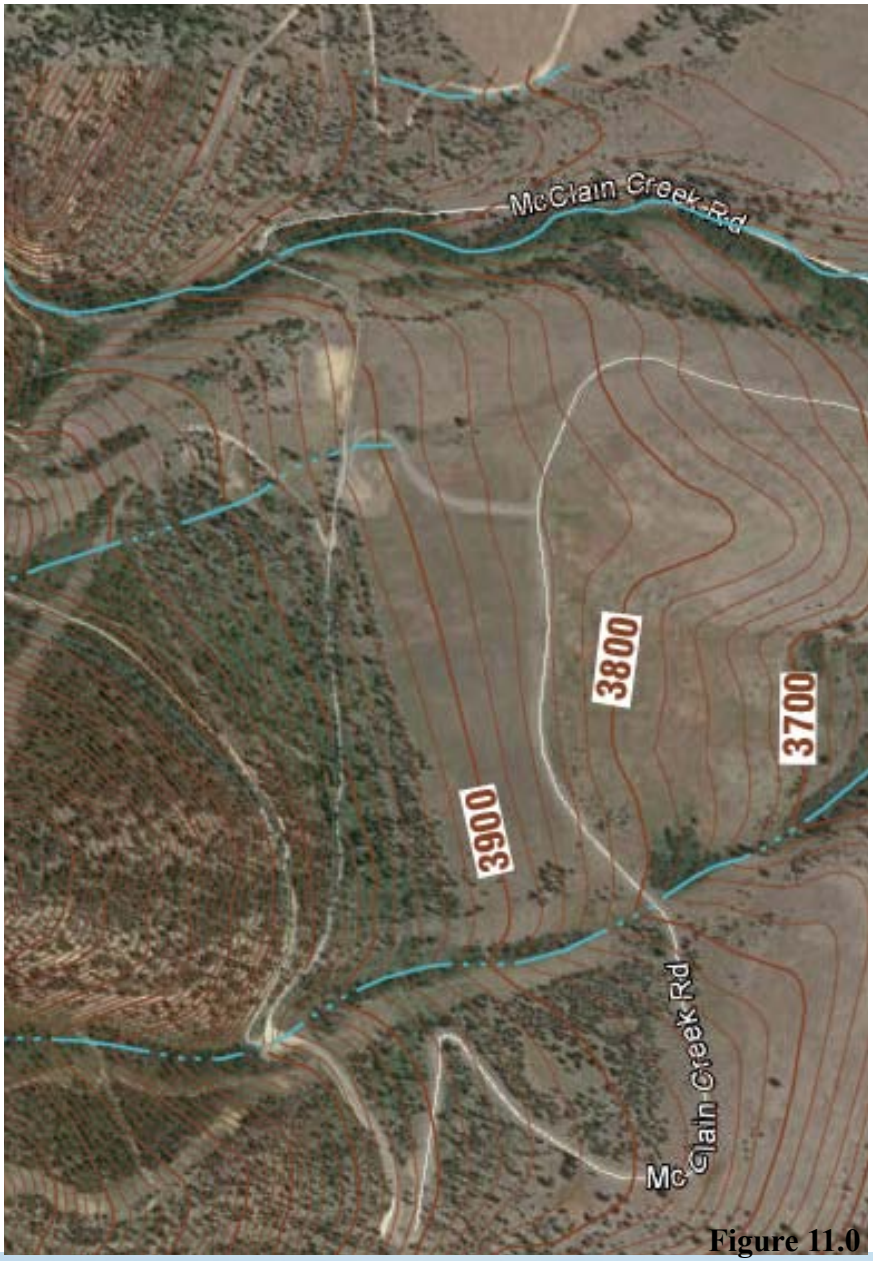


Figure 11.0

Site Reconnaissance

Center of site looking North

Figure 12.0

Center of site looking East

Figure 12.1

Site Reconnaissance

Center of site looking South

Figure 12.2

Center of site looking West

Figure 12.3

Climate Data

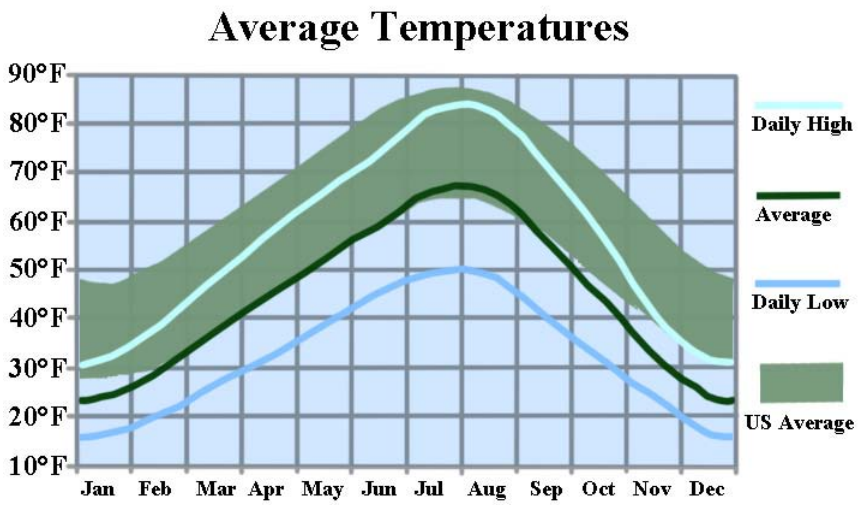


Figure 13.0

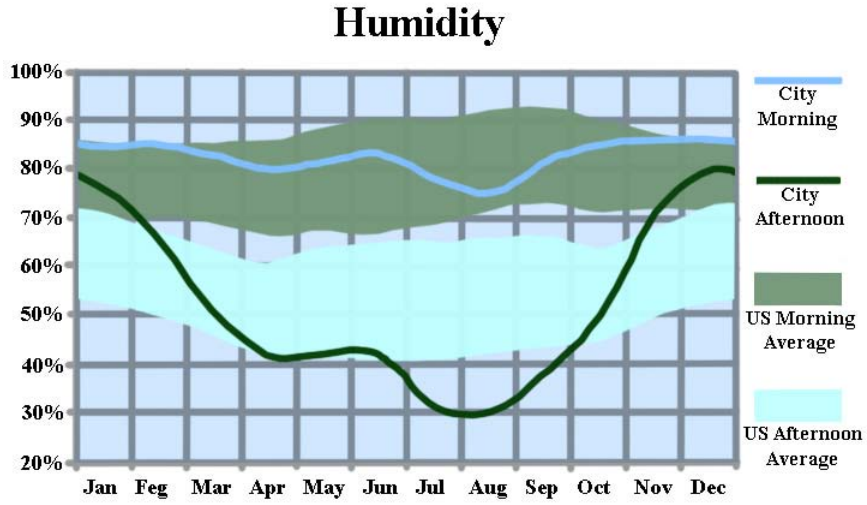


Figure 13.1

Climate Data

Precipitation

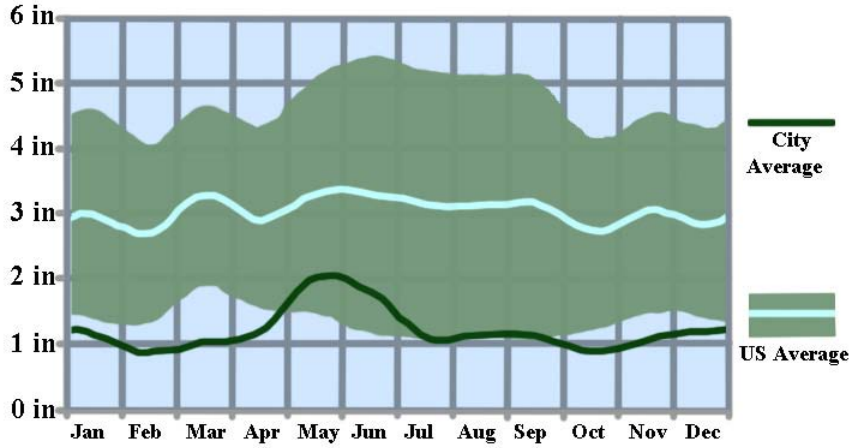


Figure 13.2

Snowfall

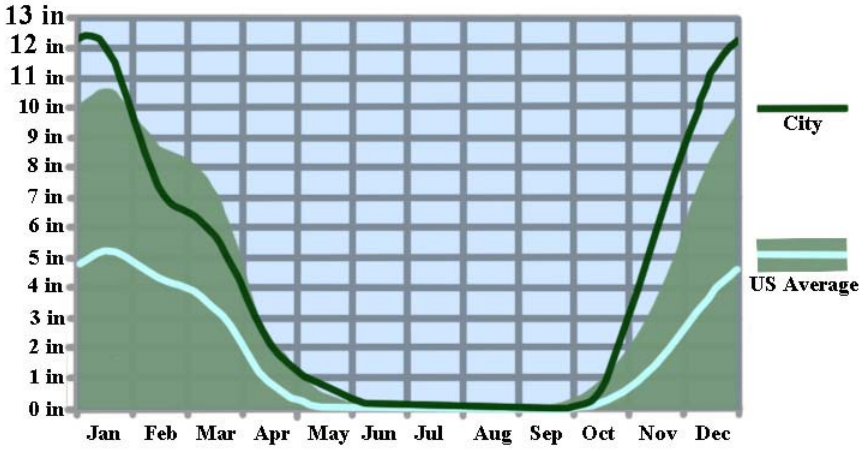


Figure 13.3

Climate Data

Cloudy Days

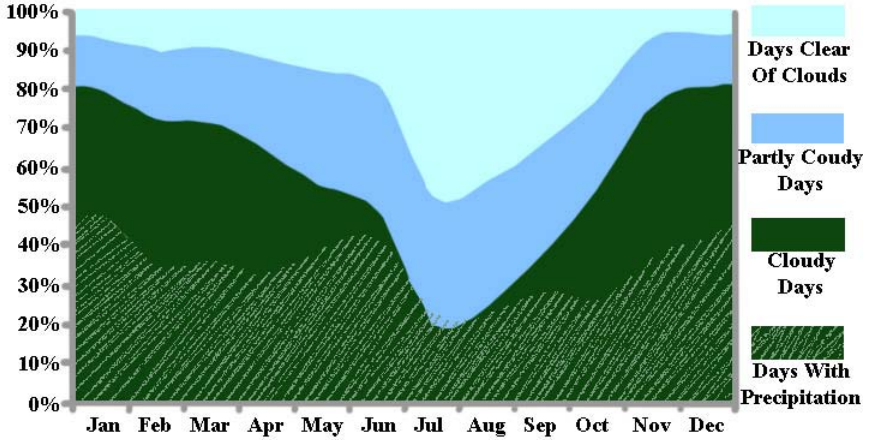


Figure 13.4

Sunshine

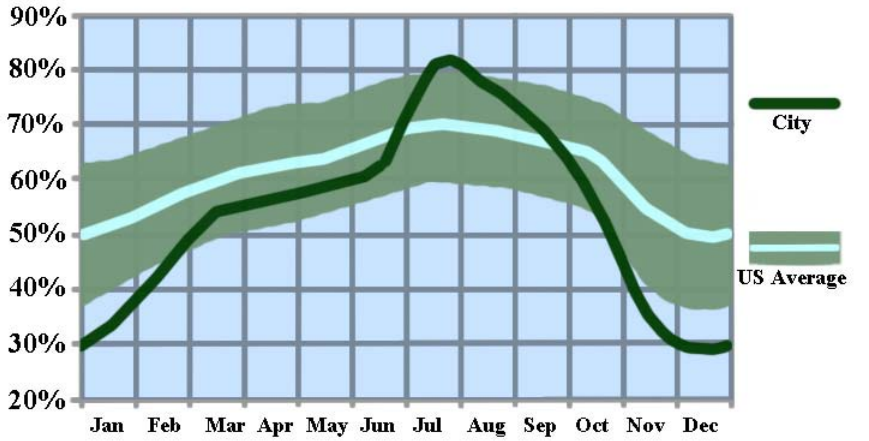


Figure 13.5

Climate Data

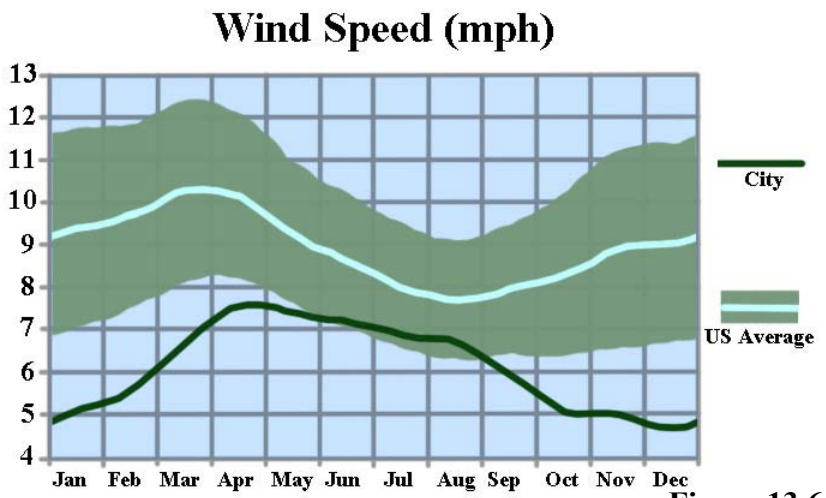


Figure 13.6

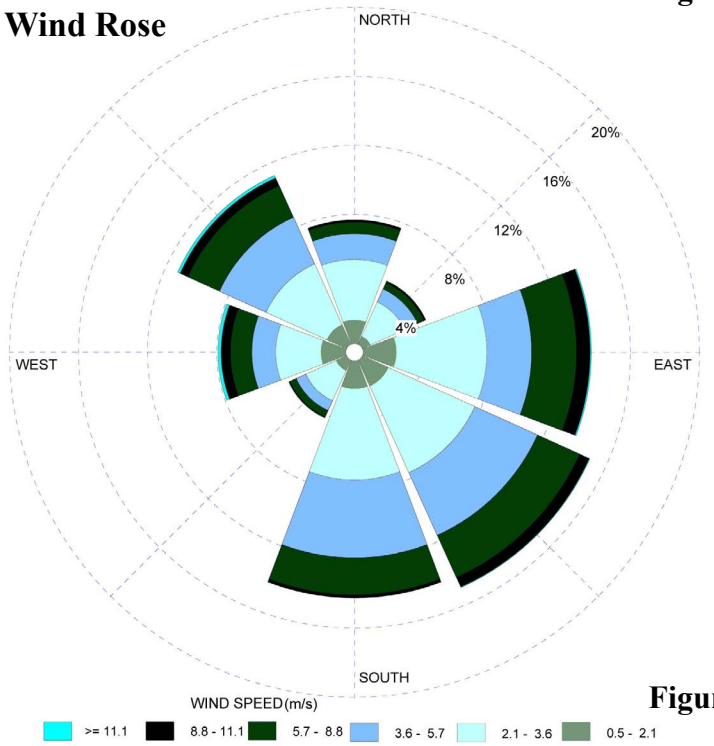


Figure 13.7

Climate Data

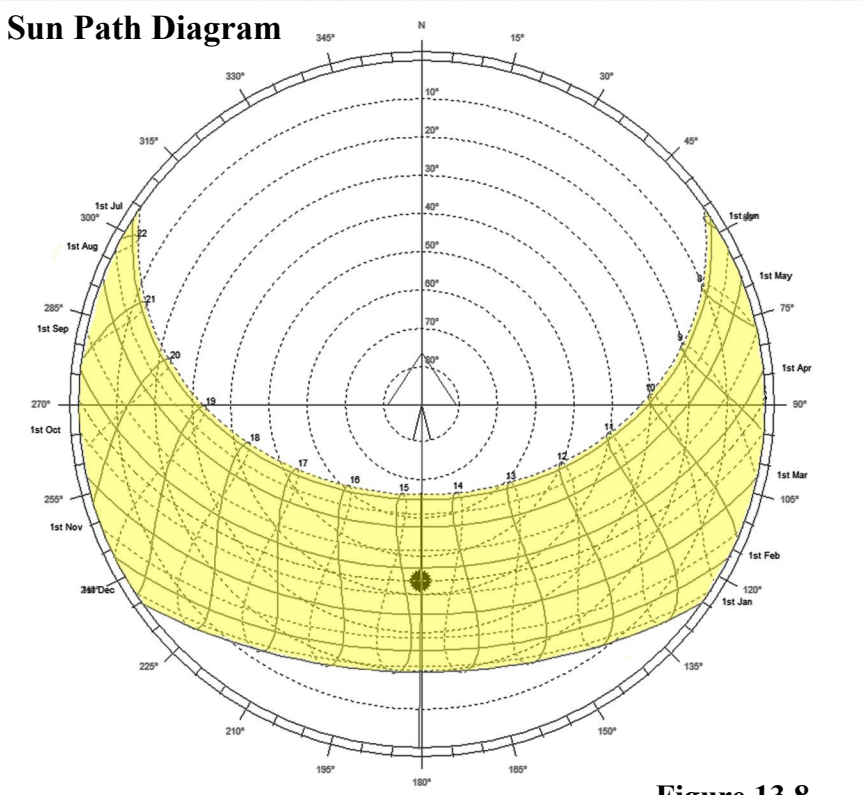


Figure 13.8

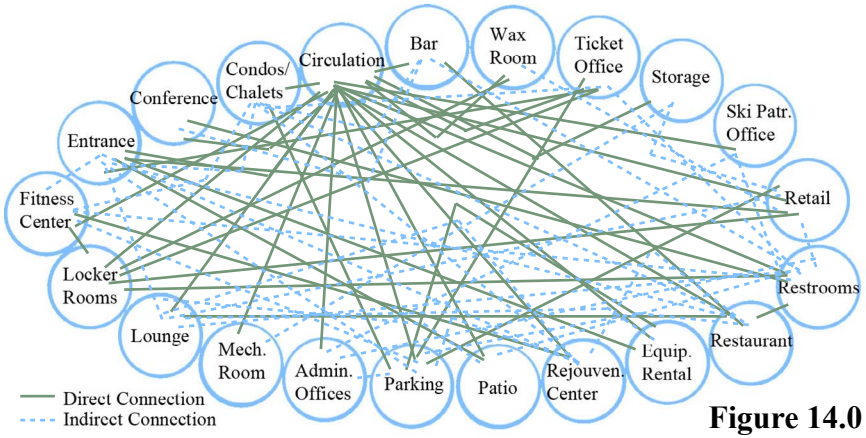


Figure 14.0

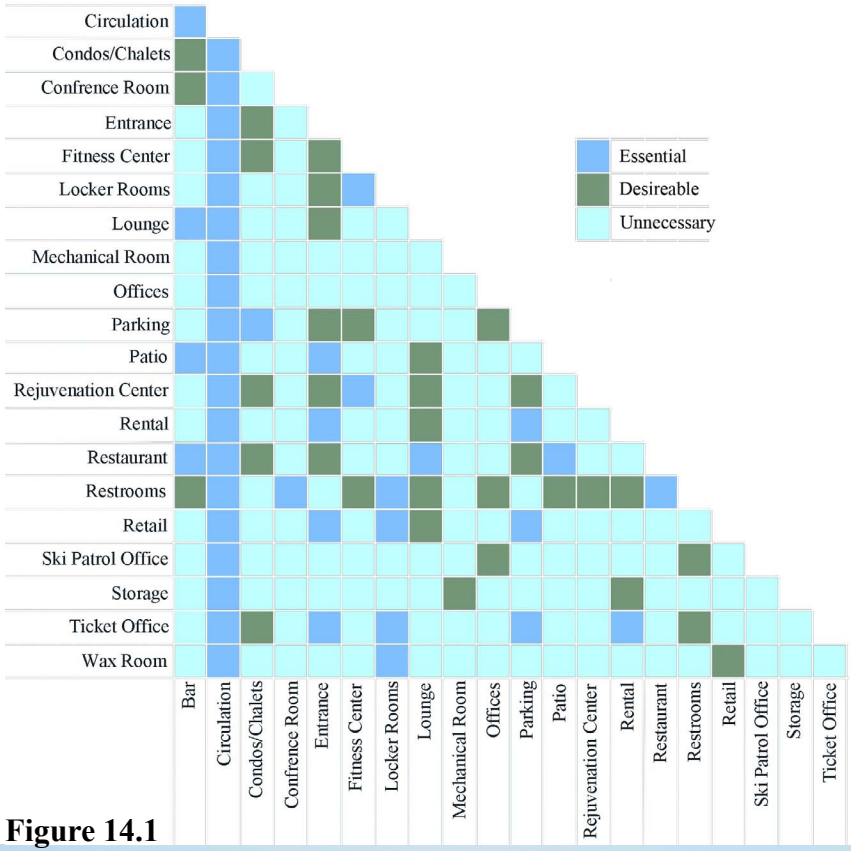


Figure 14.1

Spaces	**Area in Sq. Ft.**
Bar	400
Circulation	2,000
Conference Room	5,000
Entry Ways	600
Fitness Center	8,000
Locker Rooms	6,000
Lounge	8,000
Mechanical Room	800
Offices	2,000
Patio	2,000
Rejuvenation Center	8,000
Equipment Rental	3,000
Restaurant	3,600
Restrooms	1,000
Retail	1,600
Ski Patrol office	400
Storage	20,000
Ticket Office	600

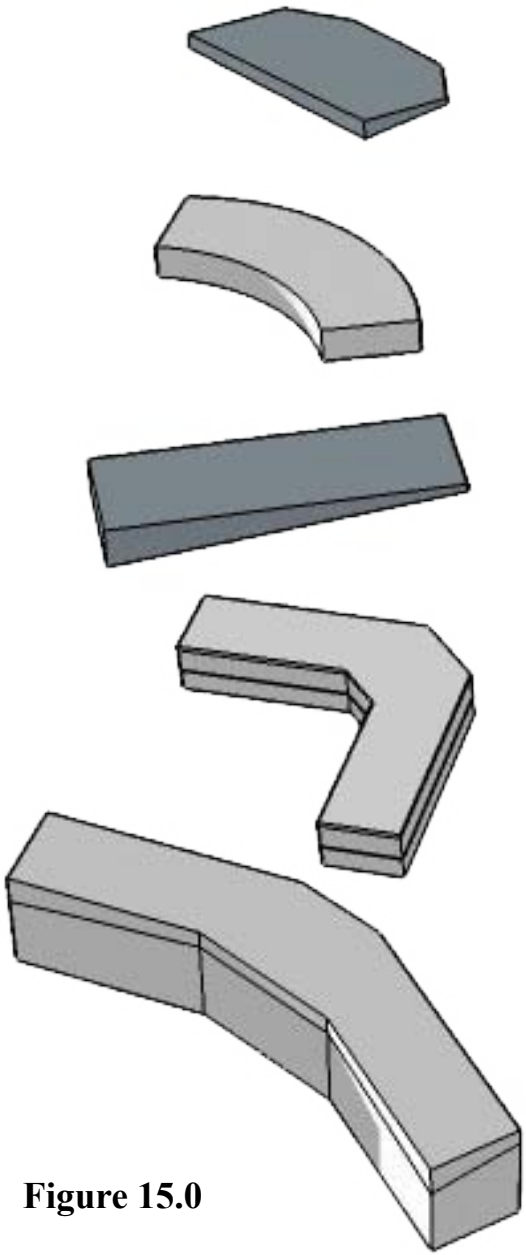
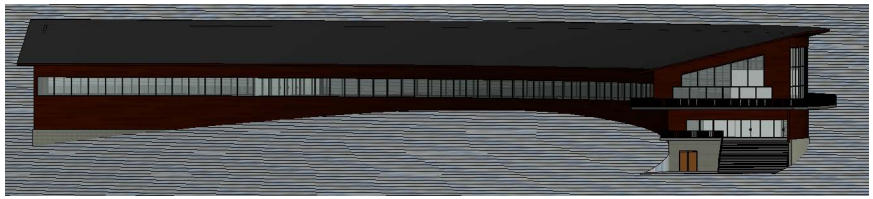


Figure 15.0

Figure 15.1



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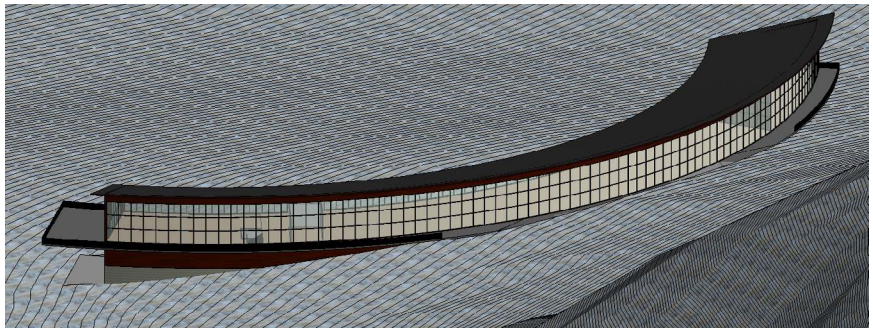


Figure 15.3

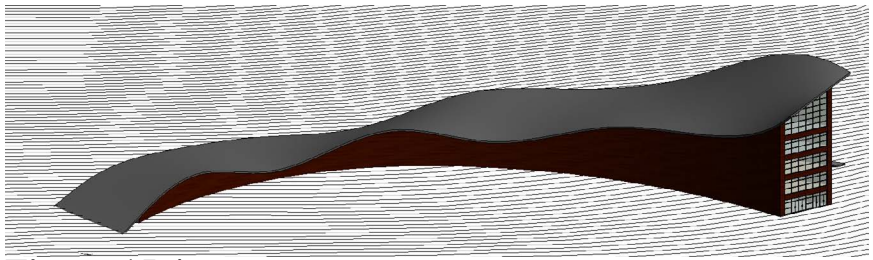


Figure 15.4

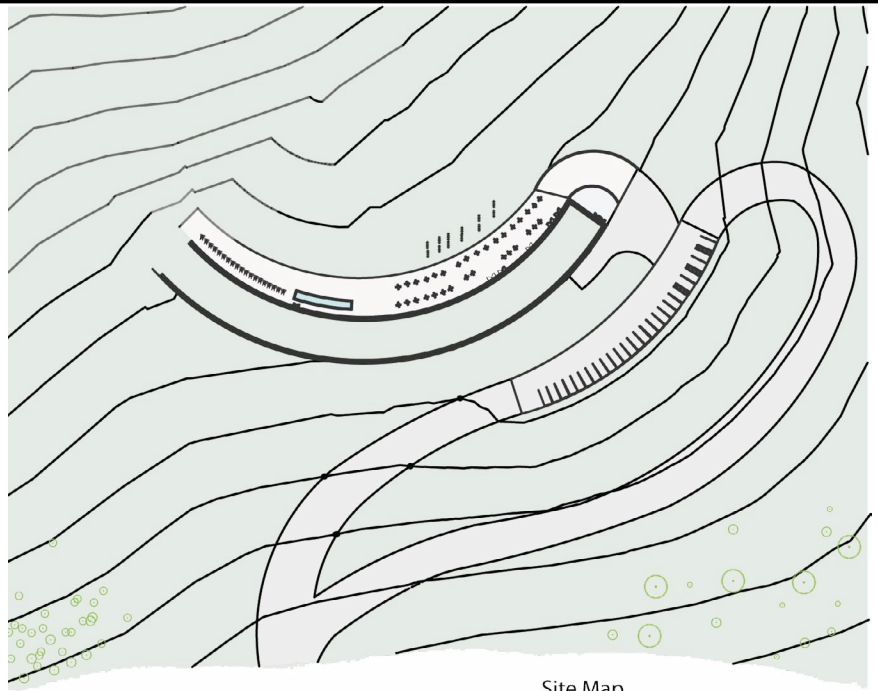


Figure 16.0

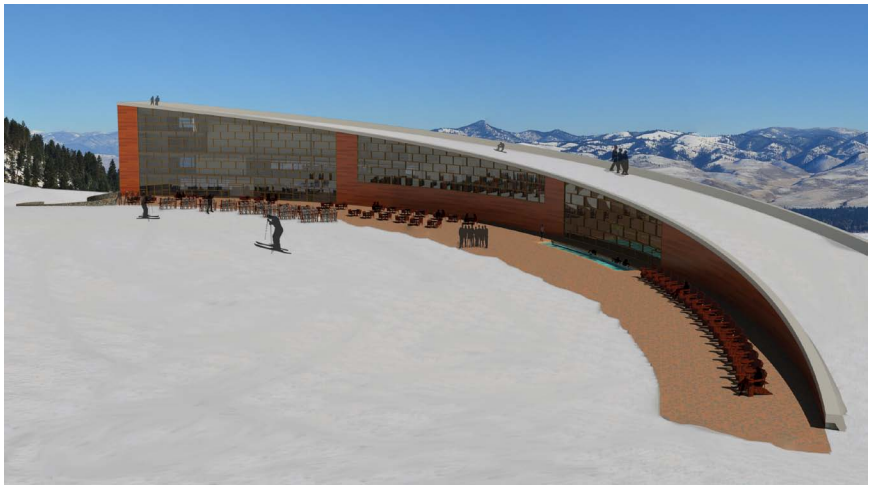


Figure 16.1

Figure 16.2

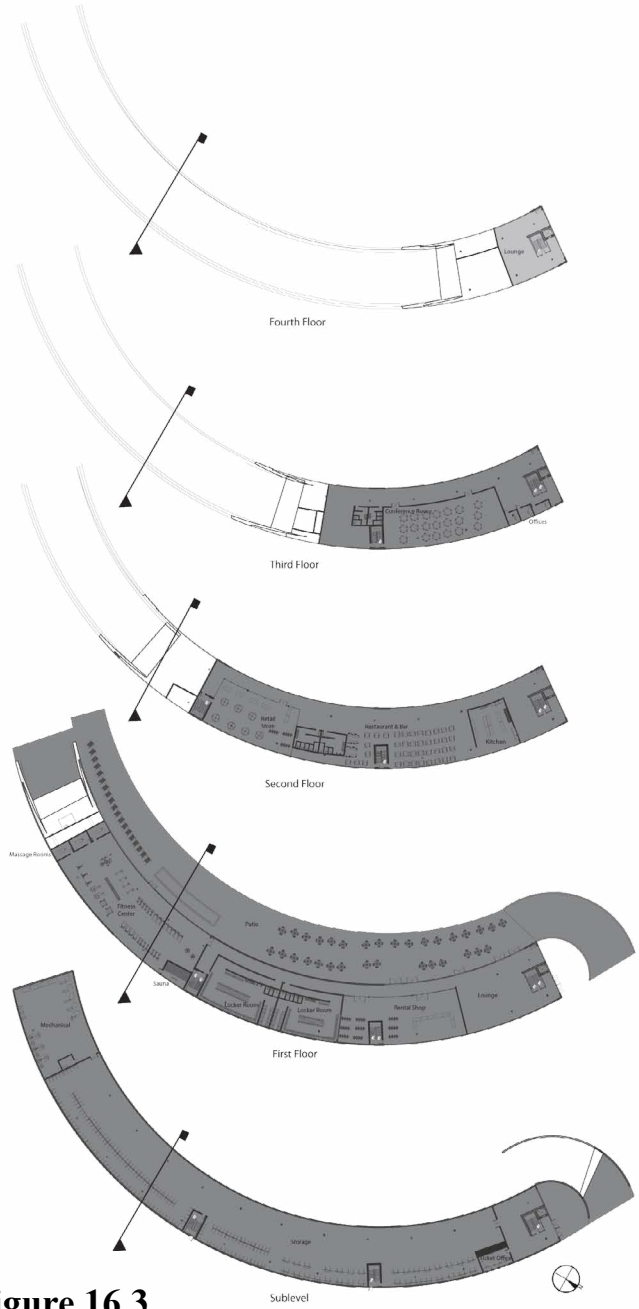


Figure 16.3

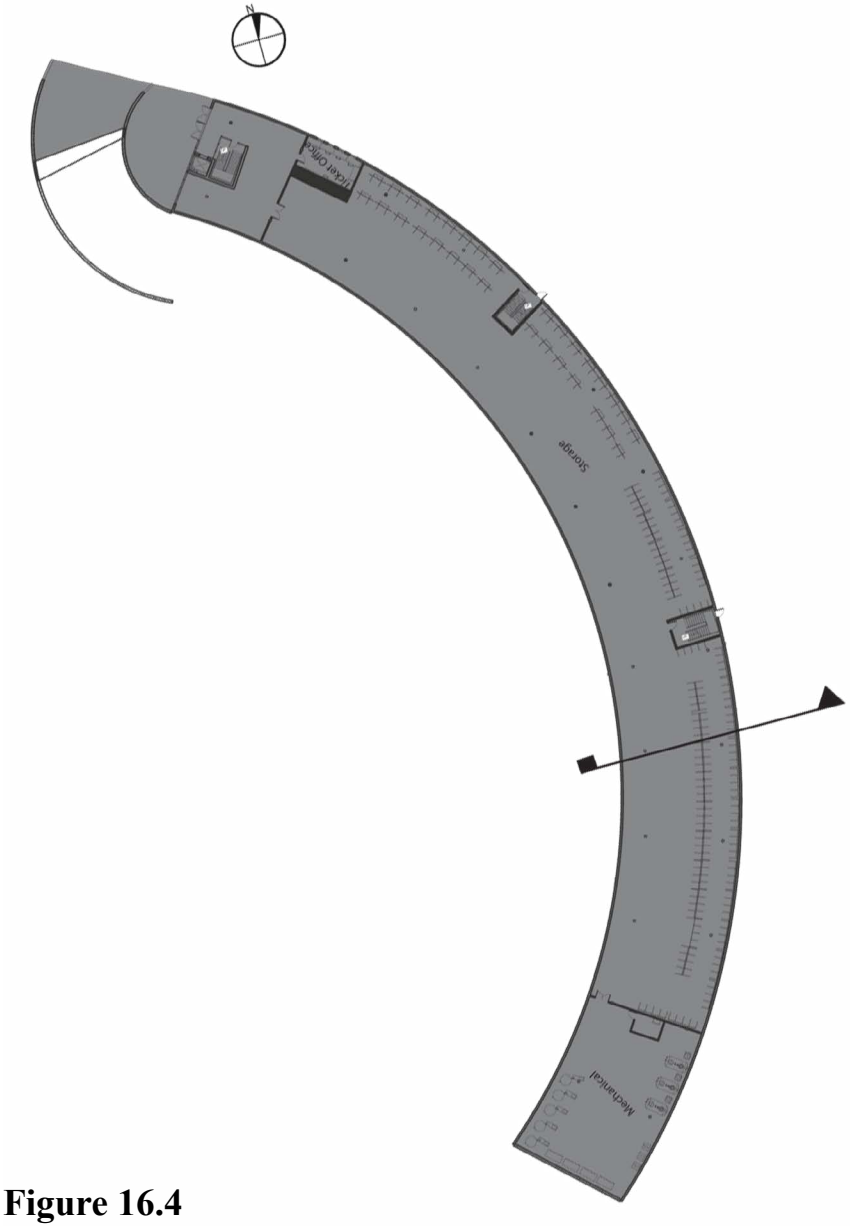


Figure 16.4

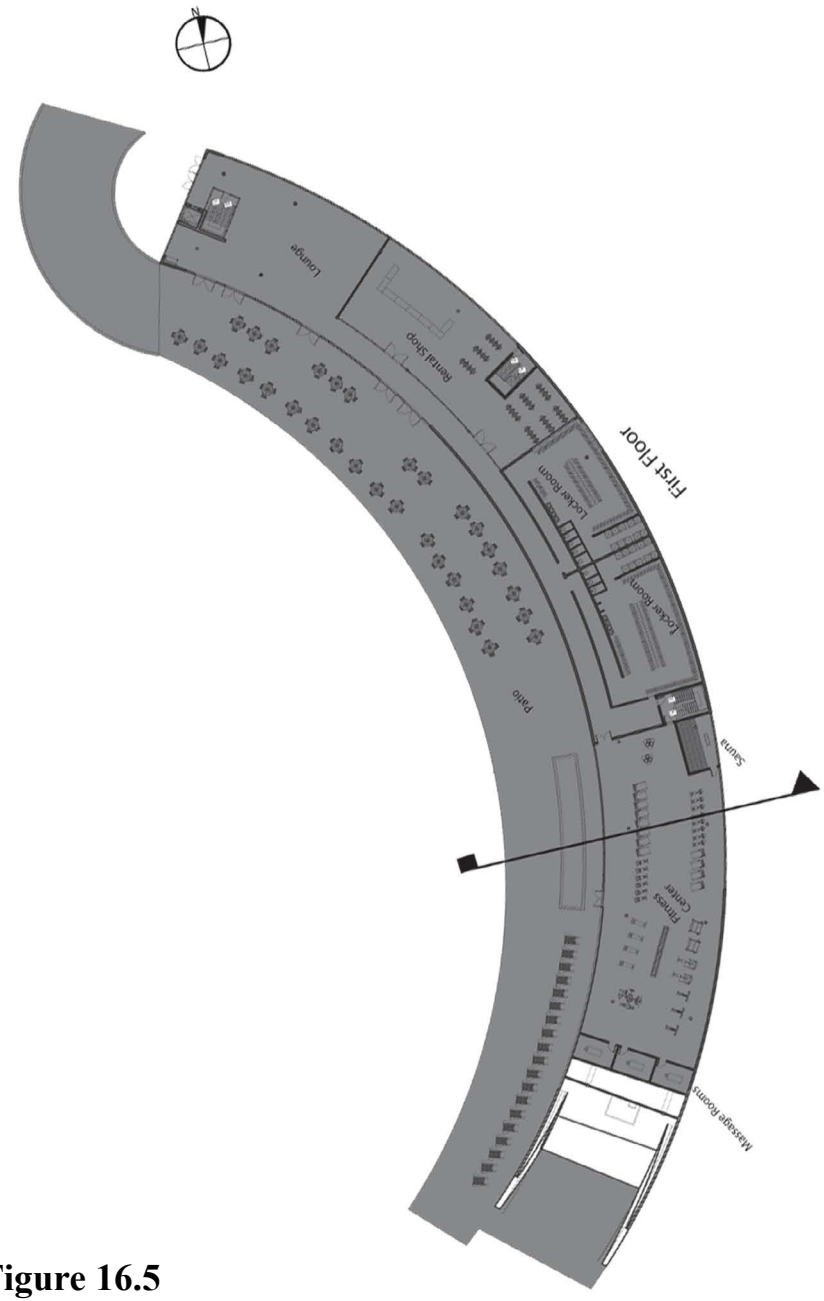


Figure 16.5

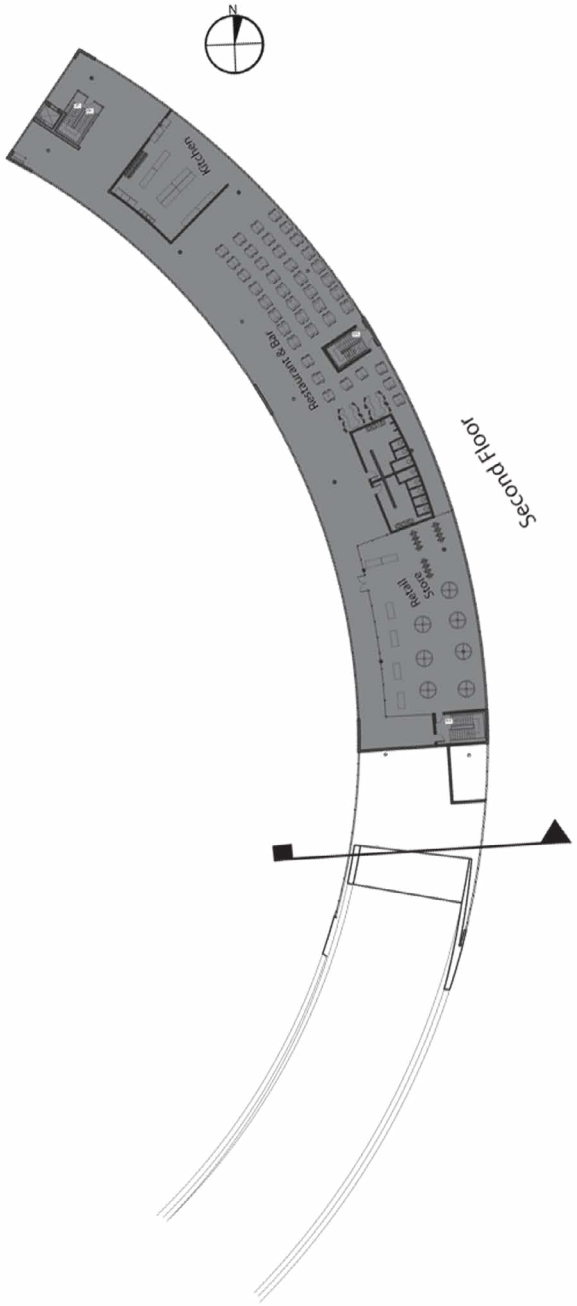


Figure 16.6

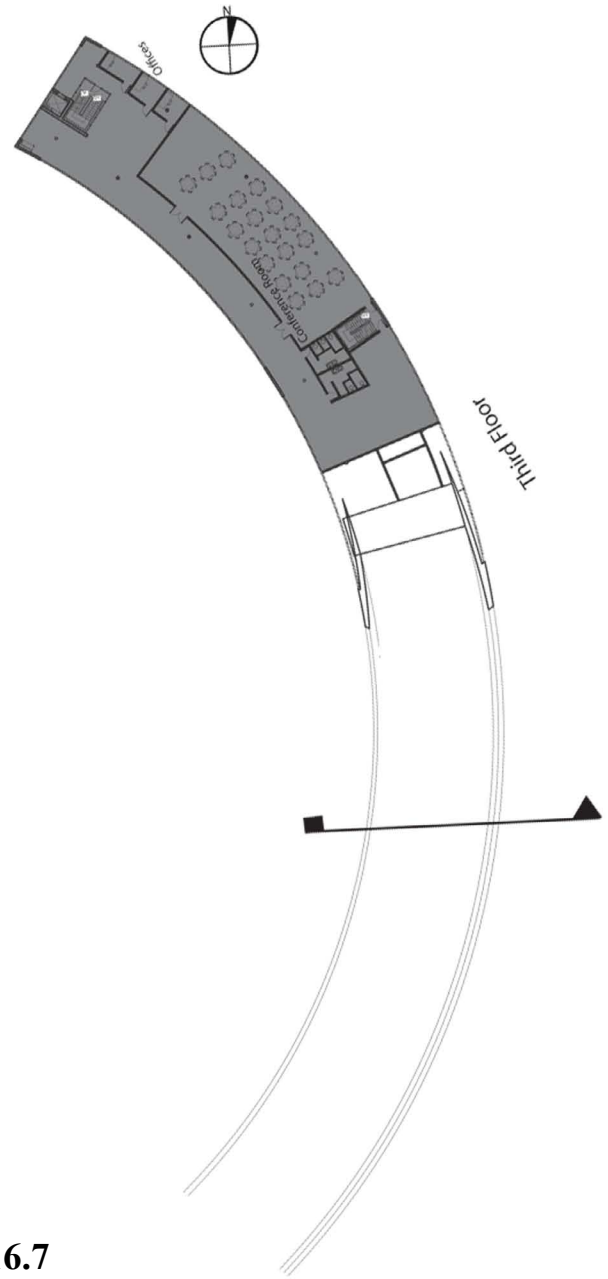


Figure 16.7

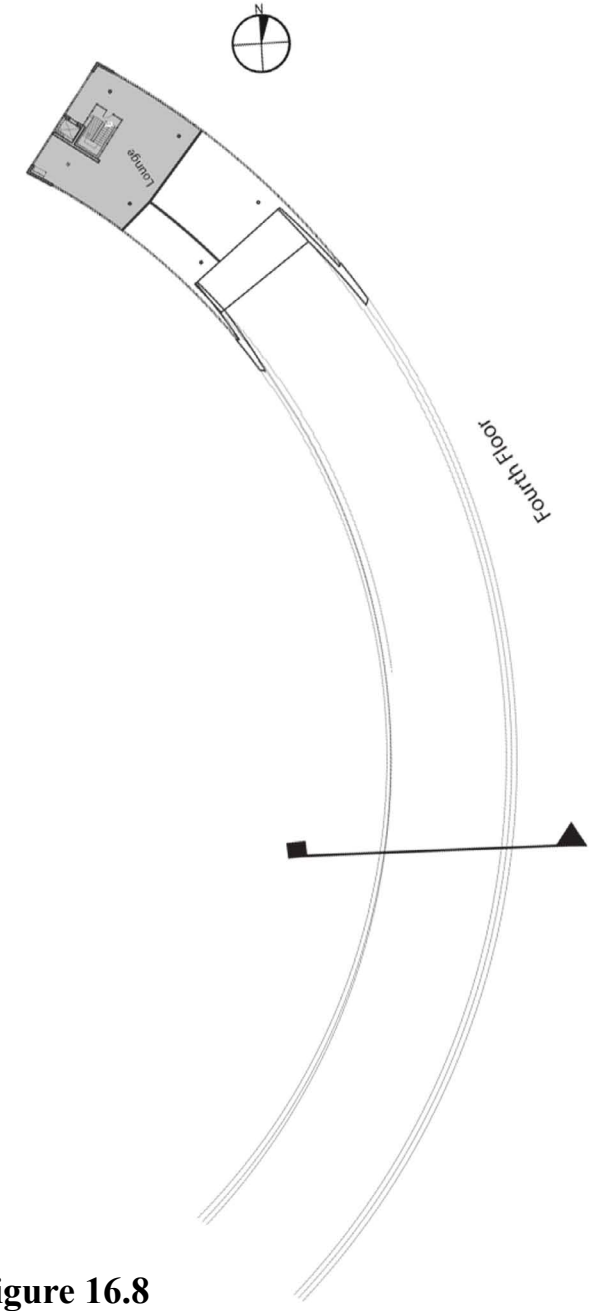


Figure 16.8

Figure 16.9

Figure 16.10

Figure 16.11

Figure 16.12

Figure 16.13

Figure 16.14

Figure 16.15

Figure 16.16

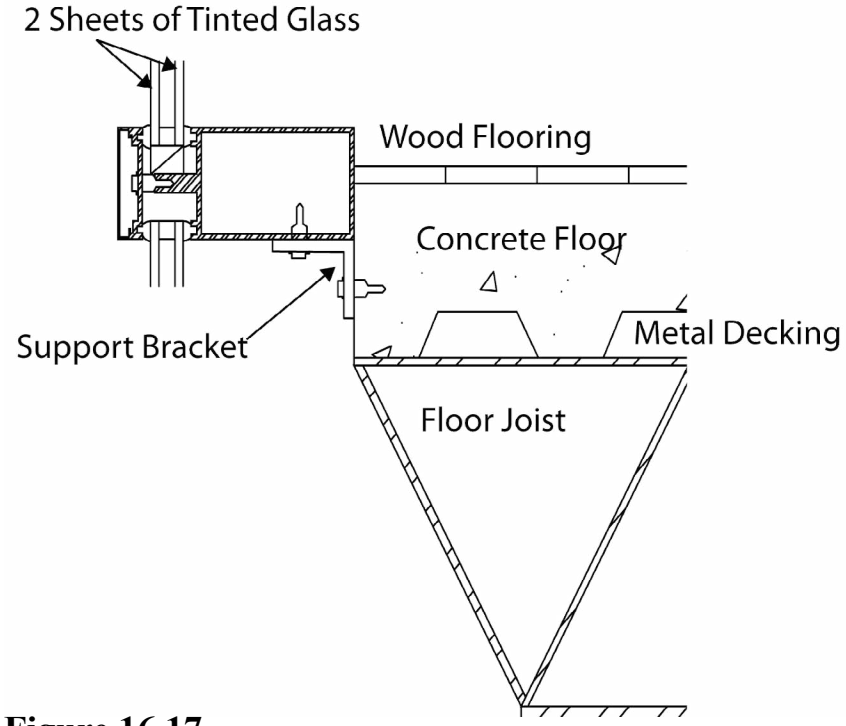


Figure 16.17

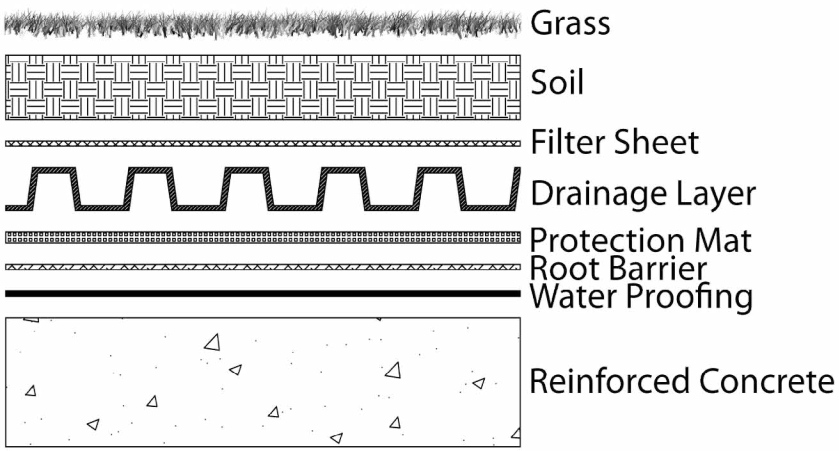


Figure 16.18

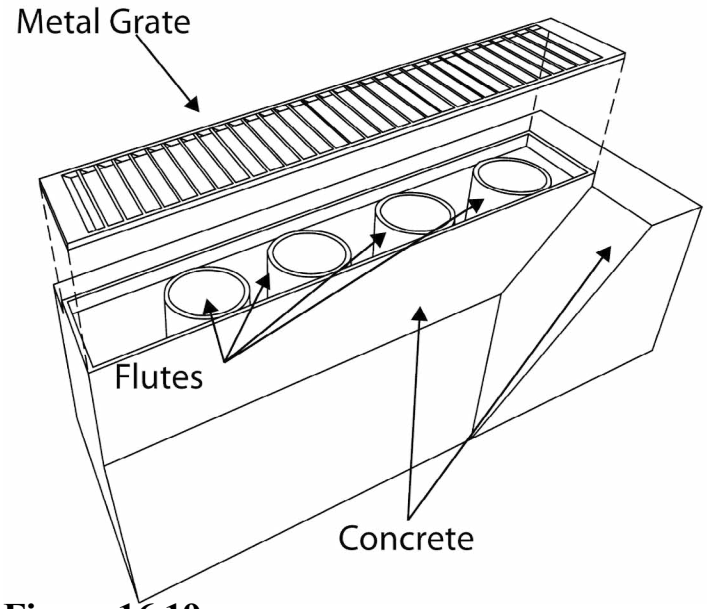


Figure 16.19

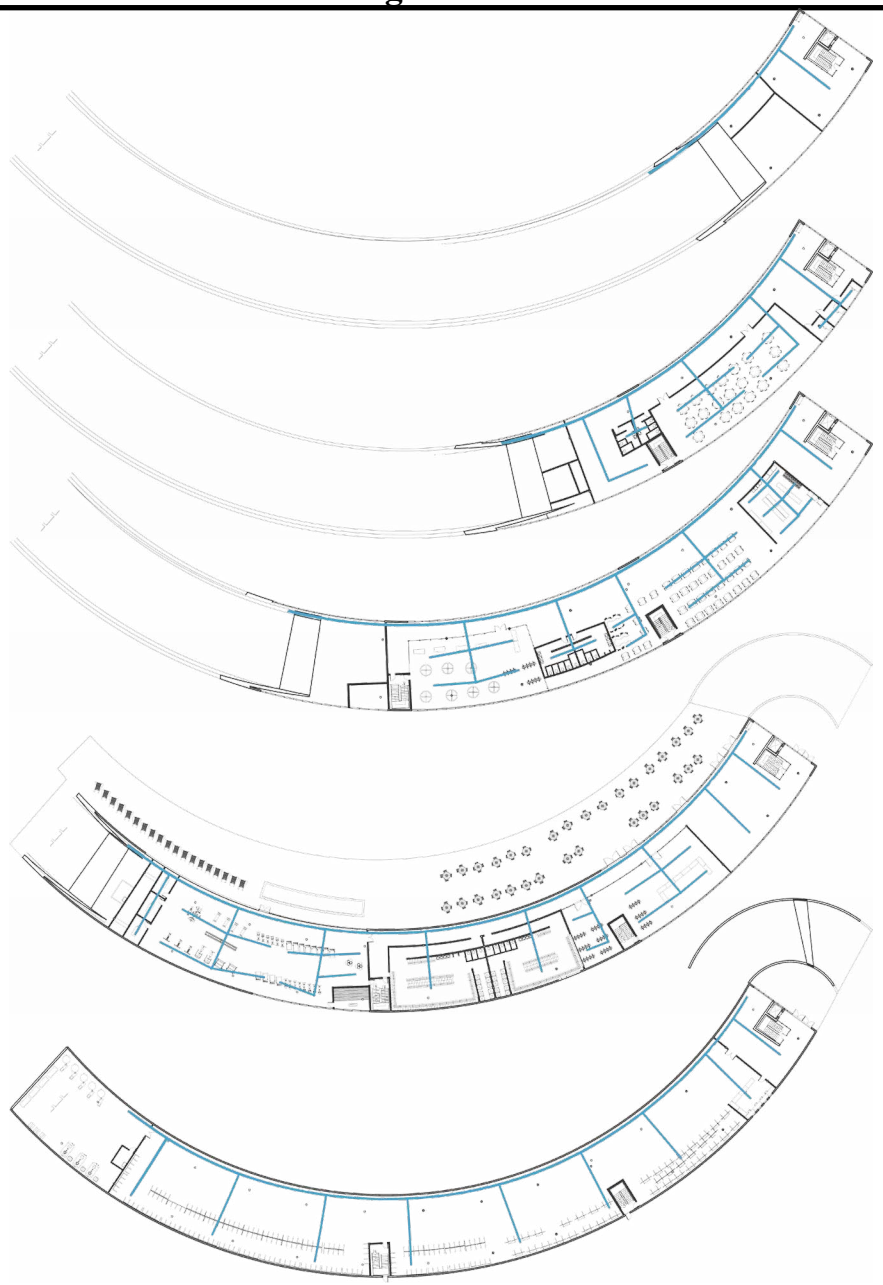


Figure 16.20

Response to the Site

The site took a bigger role in my design than I initially thought it would. My first design shapes where typical shapes for in the mountain which were not friendly with the how the topography laid out on the site.

I struggled with getting the topography on the site to match up with two levels of my building. Once I started looking into a curved shape I noticed that it created a more fluid connection between the topography and the building, causing two different floors to match up with the ground.

Response to the Typological Research and Program

During the design process I thought more about which spaces are the most crucial for my building. I looked at each space in the program and if they were not usable during every season then that space was not needed in my final design. I had two spaces that I believed were not needed for my final design which were a wax room and a ski patrol office.

My interaction matrix helped me identify which spaces were associated with which floor. I also combined the rejuvenation center in with the fitness center. The conference room became smaller after looking at what is truly necessary for the area, and the patio area became larger after the design took a closer relation to the topography of the site.

Response to Goals and Project Emphasis

My original design intention was to have a final design that incorporates more from the traditional style of ski resorts rather than the more modern style. My original design building shape looked traditional, but as I responded to the site and view from within the building it shifted away from any traditional style and moved into the modern style.

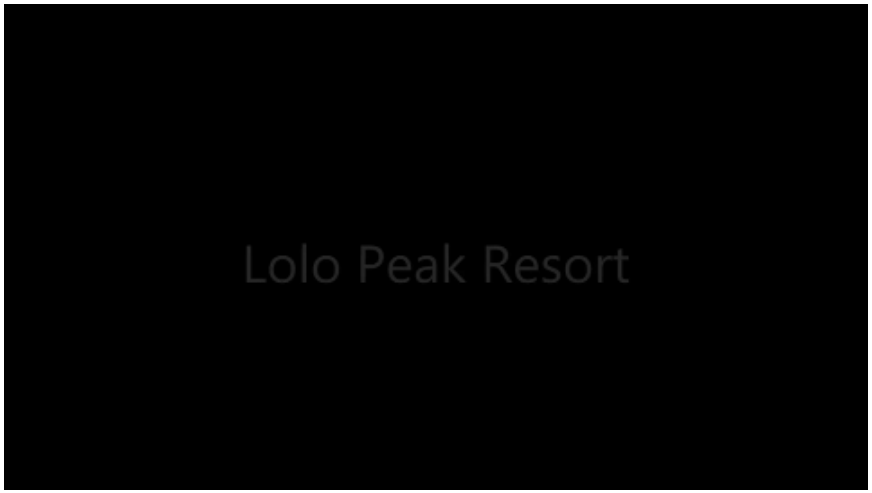
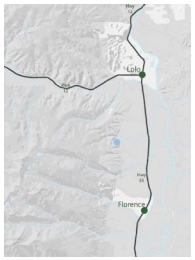


Figure 17.0



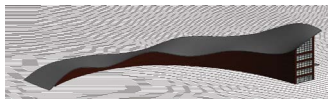

Parking and shuttle route

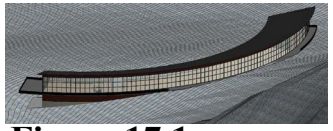

State Downhill Championship Images


First Level Hallway

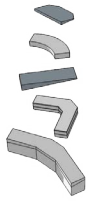

Second level Hallway

Process





Process Shapes



Hvac

Figure 17.1

Figure 18.0

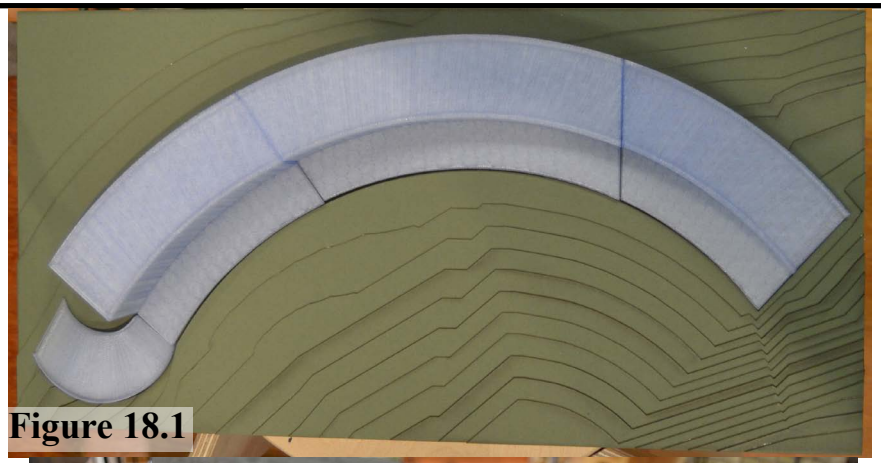


Figure 18.1

Figure 18.2

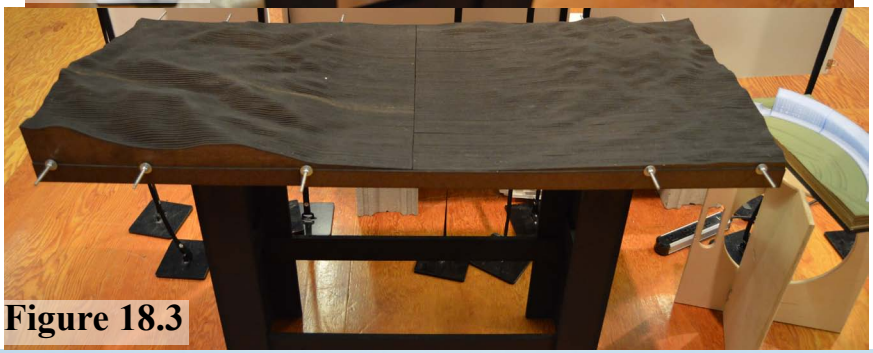


Figure 18.3

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Second Year

Fall Semester

Joan Vorderbruggen

Japanese Tea Garden

Boat House

Spring Semester

Stephen Wischer

Twin house

Music Hall

Third Year

Fall Semester

Mike Christenson

Askansese Hall renovation

Spring Semester

Steve Martens

City Hall

Museum

Fourth Year

Fall Semester

David Crutchfield

High-rise

Spring Semester

Paul Gleye

Urban Renewal

Fifth Year

Fall Semester

Regin Schwaen

Recreation & education building

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"What one does is what counts and not what one had the intention of doing."

~Pablo Picasso